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The Production and Management Journal Covering North America's Wood Pulp, Paper, Paperboard and Cellulose Industries

by MILLER FREEMAN PUBLICATIONS, INC.

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"The Cellulose Age"

EDITORIALS

A TRAIN 6,600 MILES LONG **consisting of about 815,000 standard box cars, carrying 27 tons per car would be required to load an annual United States production of 22 million tons of paper and paperboard, APPA estimates. This is compared with the total number of box cars (728,408) in service in the United States in 1946.**

A New Approach to the New York Papers

Convinced that there is a place in the literature of this industry for authoritative appraisals of the studies and discoveries which are presented at technical meetings, **PULP & PAPER** has introduced in this issue an entirely new approach to, and method of reporting, the annual technical convention in New York.

We have asked three gentlemen who are generally recognized as authorities or experts in their fields to review and evaluate for the busy mill executives some of the papers that were heard by only a comparatively few persons in the crowded rooms of the Commodore Hotel.

What's the significance of some of the papers? What's really new? For that matter, what about the reverse of the coin?

Our three authors, carefully selected for their assignments, were given carte blanche to write what they pleased, to say frankly what they thought of 1949's technical papers. Their opinions, of course, are not necessarily concurred in by this magazine.

Mr. McGregor's 23 years' experience in many phases of the pulp industry, his long service as a chairman and moderator of pulping sessions in New York and elsewhere, and his present connection with a company which makes all three of the major kinds of pulp—kraft, sulfite and groundwood, as well as bleach grades, and a company which has studied many by-products, seemed to make him an ideal choice to write up the pulping and pulping by-products sessions.

Similarly, Mr. Vincent has for years been very close to the technical advancements in papermaking and all of their related activities, including fundamental research, and so we invited him to appraise the paper and related sessions.

Dr. Gehm's position, as technical director for the industry's overall organization which is assisting and supervising in the many stream research projects all over the continent, made him a natural choice to review the new feature of the New York meeting—the session on biochemical oxygen demand.

We hope that management and production men of this industry, who are the readers of **PULP & PAPER**, will find these articles both interesting and useful.

Frankly, we have felt there is not only a place in the industry for such articles, but a definite need for them. We would like to hear what you think of them—your comments are not only welcome but solicited.

Stream Research and Taxes

There is a growing awareness in legislative halls of the investment which is being made—without any assurance of success—by pulp and paper mills in trying to find economic ways to dispose of, or use, mill wastes.

The educational campaigns which have been carried on for some time by the U. S. industry's National Council for Stream Improvement have been bearing fruit. State and federal authorities, who have been exposed to this information, now speak occasionally with a clearer understanding of the industry problem.

Now there are actually bills in Congress which are aimed to encourage investment in research by deducting the amounts spent from taxes.

Senator Wiley of Wisconsin has introduced Senate Bill 1118 to allow amounts paid by plants for treatment of industrial wastes as a deduction in computing net income in the period between Dec. 31, 1948, and Jan. 1, 1955. As in the case of the Byrnes Bill in the House, H. R. 1343, no election is permitted a taxpayer as between current expensing and depreciating on an accelerated basis.

A survey which was conducted by this magazine not long ago indicated that North American mills were spending around $300,000 annually in colleges and institutes in an effort to solve their problem. This was before the Wisconsin mill group's investment in a fodder yeast plant, reported elsewhere in this issue. And, of course, it doesn't count several millions of dollars spent on projects on their own mill properties by individual mills.

The Chicago packers have long boasted that they use every part of the hog but its squeal. A pulp and paper industry by-product development that uses even the bark of the tree is already a reality. This strikes us as going the packers one better.

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Our 1949 annual North American Review Number goes to press next month. Complete statistical and interpretive reports will again make it the outstanding reference book of this industry.

EXPANSION IN SOUTH

H & W to Spend $13,300,000

Announcement by Hollingsworth & Whitney of plans to increase by 50% the pulp and paper producing capacity of their Mobile (Ala.) plant, which followed launching by International Paper Co.'s rayon pulp mill plans at Natchez (Miss.), and the announcement by West Virginia Pulp & Paper Co. that it is considering establishment of a hardwood dissolving pulp unit at Charlestown (S.C.) has apparently re-opened the entire matter of expansion of the industry in the South—if perchance it might have been considered as closed.

Not only is there more talk of mills to be erected on previously talked-of sites, but further use of Southern hardwoods as a raw material for new units has been stimulated by development of new kraft processes.

Announcement by James L. Madden, Hollingsworth & Whitney president, that $13,300,000 would be expended to increase pulp and paper production by 50% and bleach plant capacity by 100% came as no surprise inasmuch as $2,800,000 is already being expended in expansion of water supply and treatment. The expansion of the bleach plant is in line with the strong trend in the South in this direction.

Financing, according to Mr. Madden, will be effected by $8,500,000 in sinking fund debentures maturing in 20 years and 61,510 shares of common stock of 100,000 shares authorized in March, 1946.

International Paper Co., during the past month, announced it was taking steps to acquire the 1,000-acre mill site at Natchez, Miss., with its own funds, instead of receiving the site as a gift from taxpayers. The community had voted by 97% of those casting ballots and 80% of the entire total of registered voters to issue $300,000 in bonds to buy the ground and give it to the company. The site is being cleared and contracts let, with mill to be completed early in 1950. The site is just below Natchez, and it is understood will remain outside the city limits.

Assignment of top personnel at the Charlestown mill to the new hardwood dissolving pulp project studies was announced by Theodore A. Cook, resident mill manager, in our March issue.

Studies of Hardwood Supply

In discussion of the position of Southern hardwoods it is understood that at least five surveys have been made on the alluvial lands of the Mississippi River as hardwood mill source supply. These surveys have been completed for some time, and it is understood that one plant has established raw product supply from another direction. The interest already manifested points to further activity in his direction.

There has been some talk or activity concerning a new dissolving plant on a Brunswick, Ga., site, and also at Selma, Ala., or at Demopolis, Ala. The Selma site originally received strong recommendation insofar as wood sources and there is now a revival of discussion concerning it. Demopolis, Ala., is west of this location. Reports of a mill at Gainesville, Fa., have been stimulated by the recently undertaken research of the University of Florida experiment station into scrub oak utilization.

Kalamazoo Panel Operating And Personnel Problems

Panel discussion of operating and personnel problems brought 80 persons to the February meeting of the Michigan Superintendents, in Kalamazoo. Panel members were: Ralph Atkins, Lee Paper Co., moderator; Henry Nendorf, Rex Paper Co.; W. H. Astle, Michigan Paper Co.; Arnold Weller, Sutherland Paper Co.; L. H. LaLiberte, KVP; Richard Peeters, St. Regis; and R. A. Huston, KVP.

MILTON A. SCHREINER (left), District Manager for Foxboro Co., instrument makers, recently moved to Appleton, Wis., from Chicago, to open offices at 123 West College Ave. Mr. Schreiner has been with Foxboro 18 years and in paper mill instrumentation since 1922. GEORGE LAW (right), Sales Engineer for Reliance Electric & Engineering Co., who has made his headquarters in Appleton for several years, has opened new offices at 200 West College Street.

Pay Raise in 10 Plants

Ten plants of the Robert Gair Co., including five board mills in New Jersey, New York, Connecticut and Massachusetts and three corrugating and two box plants in eastern states, agreed to a 5-cent general increase with the AFL Pulp, Sulfite and Paper Mill Workers Union. This boosted their men's base rate to $1.16 and women's to $1.06.

COMING INDUSTRY MEETINGS

Nat'l. Paper Trade Ass'n. Convention—Waldorf-Astoria Hotel, New York City .....Apr. 4-6

Kalamazoo Valley Technical Section — Columbia Hotel, Kalamazoo .....Apr. 7

Shibley Award Contest (Auspices Coast Technical Sections)—Longview, Wash.....April 8

Lake States Technical Section—American Legion Club House, Appleton, Wis. .....Apr. 12

American Institute of Electrical Engineers — Statler Hotel, Buffalo, N. Y. .....April 11-12

Southern Pulp and Paper Safety Assn. — Fort Sumter Hotel, Charleston, S. C.....April 11-12

National Corrosion Engineers Ass'n. Exhibit—Netherland-Plaza Hotel, Cincinnati, O.....April 11-14

New England Technical Section—Roger Smith Hotel, Holyoke, Mass. .....Apr. 15

Empire State Technical Section—Queensbury Hotel, Glens Falls, N. Y. .....Apr. 15

Chicago Technical Section—Bar Assoc., Fields Bldg., Chicago..Apr. 18

Mich. Div. Supts. Assn.—Harris Hotel, Kalamazoo .....Apr. 21

FAO-United Nations Conference on World Pulp—Montreal..Apr. 25-28

National Coating Convention—Grand Rapids, Mich.....Apr. 26-28

Del. Valley Tech. Section—Engineers Club, Philadelphia....Apr. 28

Forest Products Research Society Annual Meeting—Civic Auditorium, Grand Rapids, Mich...May 2-4

Packaging Machinery Institute (Spring Meeting)—Hotel Dennis, Atlantic City, N. J. .....May 9

National Packaging Show—Public Auditorium, Atlantic City.....May 10-13

Coast Supts. and Western Branch Canadian Technical Section Joint Meeting—Empress Hotel, Victoria, B. C. .....May 20-21

Canadian Pulp & Paper Assoc.—General Brock Hotel, Niagara Falls, Ont.....June 1-3

Supts. Convention — Hotel Haddon Hall, Atlantic City, N. J.....June 15-17

National Tech. Ass'n. Fall Meeting—Multnomah Hotel, Portland, Ore.....Sept. 12-16

Wallboard Conference (Auspices N. E. Wood Utilization Council & Harvard U.)—Cambridge, Mass.....Sept. 16

Engineers Conference, Statler Hotel, Boston .....Oct. 31-Nov. 3

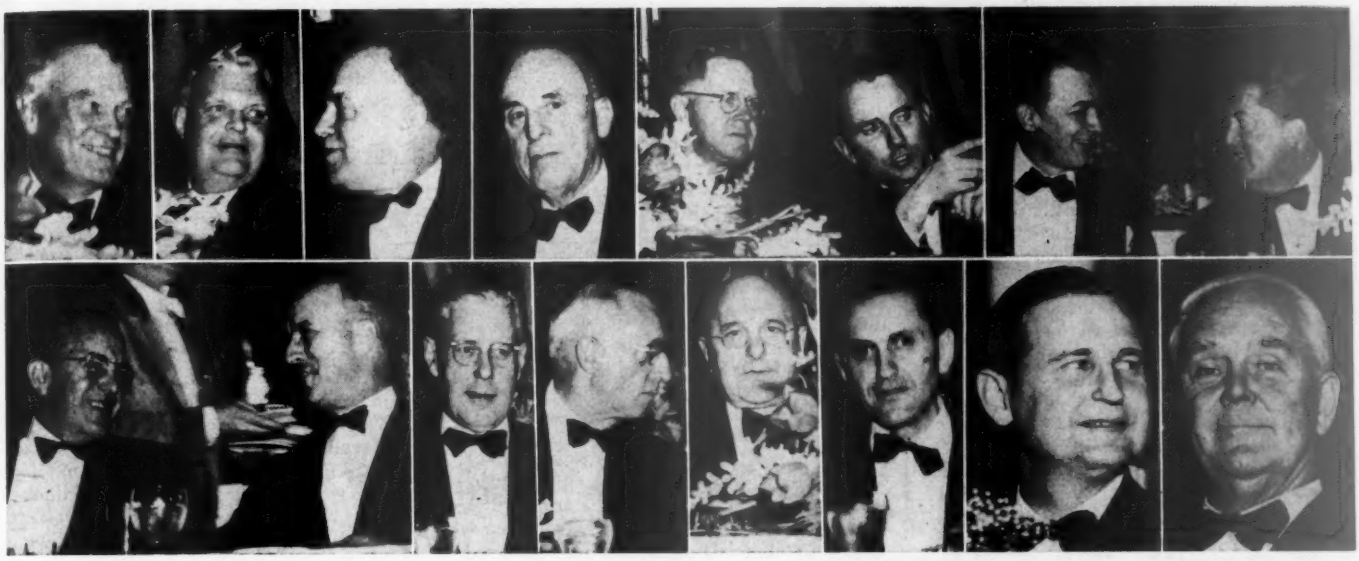
Pacific Chemical Exposition — Civic Auditorium, San Francisco.....Nov. 1-5

Paper Industry Salesmen—Midston House, New York City—Every Monday, 12 noon to 2 p.m.

Allied Industries' Luncheon Club—Second Monday of month, 12 noon, Commodore Hotel, New York.

WHAT HAPPENED IN NEW YORK

LEADERS OPTIMISTIC



HONOR GUESTS IN GRAND BALLROOM OF WALDORF-ASTORIA, snapped by PULP & PAPER'S photographer. (Left to right): Top row—JOHN H. HINMAN, President, International Paper Co.; R. L. FITTS, President, Southern Advance Bag & Paper Co.; SYDNEY FERGUSON, Chairman of Mead Corp., and Head of American Forest Products Industries; NORMAN W. WILSON, President, Hammermill Paper Co.; R. A. McDONALD, Executive Vice President, Crown Zellerbach Corp.; JAMES L. MADDEN, President, Hollingsworth & Whitney; R. M. FOWLER, President, CPPA; ROY K. FERGUSON, President, St. Regis Paper Co.

Bottom row—DAVID K. LUKE, Jr., President, West Virginia Pulp & Paper Co., D. K. BROWN, President and General Manager, Neenah Paper Co.; DONALD S. LESLIE, Vice President and General Manager, Hammermill Paper Co.; F. G. COBURN, President, Brown Co.; P. H. GLATFELTER, President, P. H. Glatfelter & Sons; LOUIS DOLIVET, International Editor, "United Nations World," and principal speaker of the evening; MAXWELL BARDEEN, President and General Manager, Lee Paper Co.; REUBEN ROBERTSON, President, Champion Paper & Fibre Co.

THE HEAD MEN FOR 1949

American Paper and Pulp Association, Cola G. Parker, Kimberly-Clark Corp.

Technical Association, Albert E. Bachmann, Missisquoi Corp.

Sulfite Paper Manufacturers Association, George Stuhr, International Paper Co.

Salesmen's Association, Alan B. Helffrich, St. Regis Paper Co.

Groundwood Paper Manufacturers Association, James G. Conley, Fraser Paper, Ltd.

Bristol Board Group, R. M. Swaney, Franklin Paper Co.

Coated and Processed Paper Association, William B. Snow, Middlesex Products Corp.

Writing Paper Manufacturers Association, W. B. Zimmerman, Howard Paper Mills.

Newsprint Service Bureau, John L. Hobson, St. Croix Paper Co.

Stream Improvement Council, George E. Dyke, Robert Gair, Inc.

Cover and Text Paper Group, D. T. Quirk, Peninsular Paper Co.

Association of Pulp Consumers, William Beckett, The Beckett Paper Co.

Glassine and Greaseproof Association, Paul E. Hodgdon, Deerfield Glassine Co.

The Tissue Association, H. G. Wintgens, Hoberg Paper Mills.

Waxed Paper Institute, W. P. Patterson, Specialty Papers Co.

Kraft Paper Association, Gilford F. Henderson, Brown Co.

American Pulpwood Association, Frank A. Kelly, Northwest Paper Co.

For the 72nd time the American Paper and Pulp Association and its affiliated organizations convened in New York City in late February, and not since the end of the war in 1945 had the gathering been set against so many undertones of conjecture. For, definitely, this was the beginning of a new phase in the industry, and the end of an old one.

As the Armistice drew near a few years ago it was the almost unanimous feeling of the industry that the end of hostilities would see the end of the seller's market. Only a few optimists believed that peak sales would continue. This year the identical feeling was in the air, unmistakably and despite the optimistic tones of the leading speakers. Would the pessimists prove wrong again—as wrong again as they were in 1944 and 1945? Only time would tell, but the industry facts as the meetings started at the Waldorf-Astoria were certainly no cause for alarm.

As the APPA sessions got under way the ratio of U. S. paper production to mill capacity for the week was 94.3 compared with 94.2% for the preceding week, and 99.4% for the corresponding week of 1948. The weekly capacity of mills, not including mills producing newsprint exclusively, was 172,058 as compared with 180,863 tons for the same week last year. True, the industry was "off" a little from a year ago, but it was "off" from such a high level that visiting Canadians to the APPA sessions expressed astonishment at the corners of gloom here and there around the Waldorf. Paperboard had a little more to worry about during Paper Week—its production ratio was 86% as compared with 99% for the corresponding week a year ago.

Clark Everest Speaks Frankly

So D. Clark Everest, president of Marathon, spoke straight from the shoulder at the Sulfite Paper Manufacturers' luncheon:

"If the economy of this country has reached a point where it cannot withstand a slight falling off in the placement of business without going into a tailspin, or everyone developing a case of jitters, then the country is in a precarious situation indeed. During the last ten years everybody has developed a cash-register complex. Everyone wants to check the cash register at night and know exactly how much money they made that day, and if today's 'take' is not more than yesterday's then, in their manner of thinking, everything has gone to hell in a hand basket."

Both at the sulfite industry luncheon and at the luncheon of the technical asso-

ciation, Mr. Everest discussed a chart he had prepared covering the industry from 1900 to 1948. Said he:

"I am confident this fundamental information has not been presented before in this way. This chart is the basis for my optimism and also my criticism of partially informed persons who presume to tell others just what is going to happen in our business.

"Let us emphasize what this chart shows. I will not go over the whole period, during which time total consumption increased from 2.2 to 26.1 million tons and consumption per capita from 58 to 357 pounds, but will confine my remarks to the period from 1939 to 1948, inclusive. This is a period of ten years and is the length of time bankers and others ordinarily look at, in consideration of your earnings when you require financing. This chart shows how fallacious such an idea may be as no business situation remains static.

"Let us take 1939 as a starting point. That year this country had a population of 131 million; it consumed 15.9 million tons of paper and paperboard or 243 pounds per capita. In 1948, however, there were 147 million people in this country and they consumed 26.1 million tons of paper and paperboard or 357 pounds per capita. Therefore, in the last ten years this country has increased in population by 16 million or 12.2%. This is one of the points I want to emphasize. An increase of 16 million people in ten years represents 133% of the total population of the Dominion of Canada, and what would some manufacturers give for the Canadian market for their products!

EXPERTS REVIEW TECHNICAL SESSIONS IN NEW YORK, FOR PULP & PAPER READERS

Late in February about 1,500 of the 4,000 members of the industry's technical association gathered at the Commodore Hotel in New York to consider seventy-two technical reports on subjects covering almost the entire range of pulp and paper manufacturing. The 1949 registration set a new record for attendance and reflected the continuing health of the industry. The record-breaking attendance meant something else—that the industry is more eager than ever for information on new processes and equipment as business moves into a more competitive area.

To bring understanding of the great mass of technical papers to the thousands who did not attend Paper Week, this publication assigned three industry experts to cover three separate sections of the program and discuss their high points. George H. McGregor, Minnesota & Ontario Paper Co., and veteran chairman of pulp sessions at the annual meeting, was selected to discuss the sessions on pulping and related processes.

Rex Vincent, Bulkley, Dunton Company, was selected to review the discussions on papermaking.

Dr. Harry Gehm, National Council for Stream Improvement technical director, was selected to discuss the papers coming under the general heading of biochemical oxygen demand, which was a new important feature of the annual meeting.

THEIR PAPERS START ON PAGE 78.

"What is the reason for the great increase in the manufacture of pulp and paper?" asked Mr. Everest. " As I see it, several factors contribute.

"First and foremost: There is no economic substitute for these products. There is no satisfactory material for wrapping that affords the same protection that you can buy for as low a price per square foot. There is no material available on which you can print and get as satisfactory a reproduction result in reading or display lineage at so low a cost per square foot. Basically, this industry is on a firmer footing than any other I know of, inasmuch as there is no substitute material supply hanging over us to threaten the stability of the industry.

"Second: We have developed new grades of paper and paperboard and, most important, new uses for both new and old grades. Every new use and new application has been brought about for some economic reason.

"Third: The increase in population means a continued high rate of use of all paper products. In ten years, in addition to the increase brought about through new uses, we have 16,000,000 more potential customers. Barring some dire calamity, I see no reason to doubt the population will continue to increase. People live longer and more babies are born. From the cradle to the grave, from birth certificate to death certificate, people cannot get away from the use of paper products in some form. If paper production was suspended for one month, this country would be in the worst mess it has ever known.

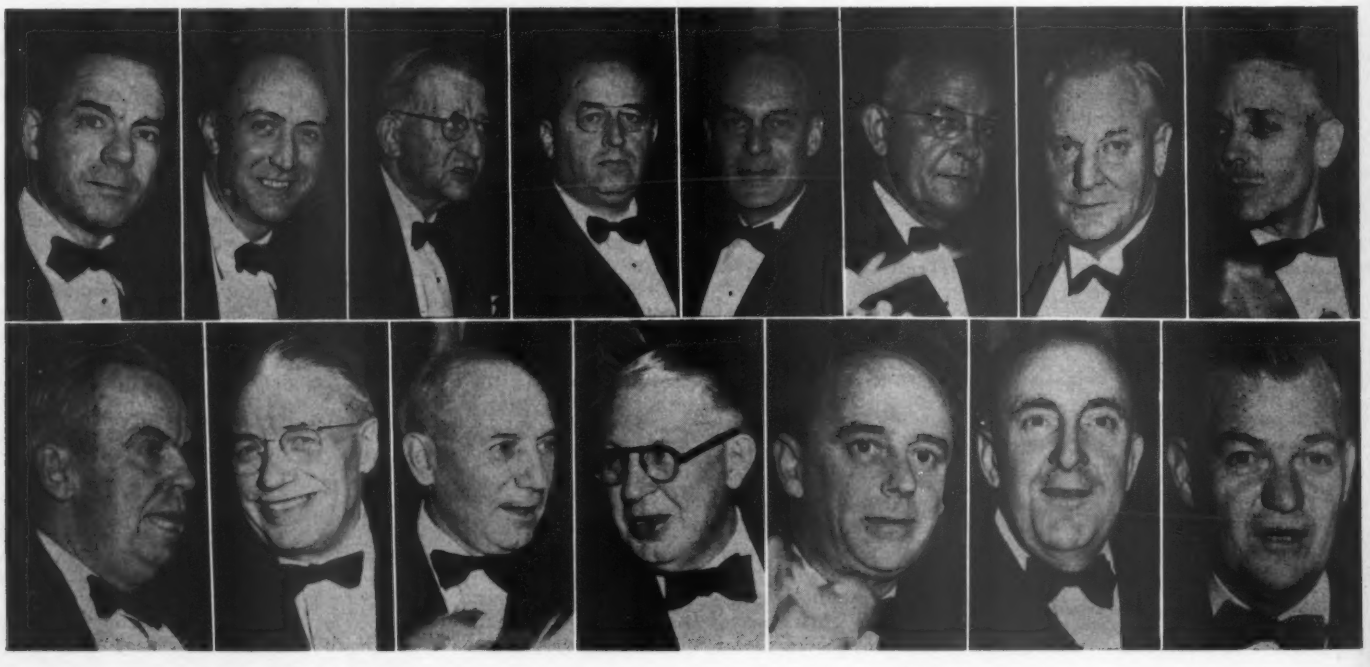
"Fourth: In addition to the productive capacity of paper and paperboard which has been built up in this country, we have another reassuring factor that has been augmented during the ten-year period and

(Continued on Page 72)

ATTENDING APPA BANQUET (Left to right):

Top row—ALAN B. HELFFRICH, President of Salesman's Ass'n.; A. W. STOMPE, Marathon Corp.; A. SOUTHON, Kalamazoo Vegetable Parchment Co.; RALPH G. LUFF, National Paper Trade Ass'n.; L. D. LINCOLN; E. E. GRANT, Crystal Tissue Co.; OLIVER M. PORTER, Chief, Pulp & Paper, Forest Products Div., NSRB; L. K. LARSON, Pulp Div., Weyerhaeuser Timber Co.

Second row, CRANSTON WILLIAMS, Newspaper Publishers Ass'n.; ARCH CRAWFORD, representing Magazine Publishers; JOHN D. MYLREA, Chief, Forest Products Div., NSRB; HUGO H. HANSON, President, C. W. Hamilton & Sons, and retiring President of Pulp Consumers Ass'n.; PAUL MAHONY, International Paper Co.; G. F. HENDERSON, Brown Co.; and R. A. COLGAN, Jr., National Lumber Mfgers.' Ass'n.



WISCONSIN CAMPAIGN

Also, Yeast Plant Progress

The management of sulfite paper mills of Wisconsin envinced a real show of faith in the reasonableness of the citizen-in-the-home who buys its paper products and benefits from its very industrial existence.

They asked for his confidence by the simple method of going right to his doorstep with newspaper space and taking him into their confidence to explain "What we are doing to logically approach our part of the stream pollution problem?"

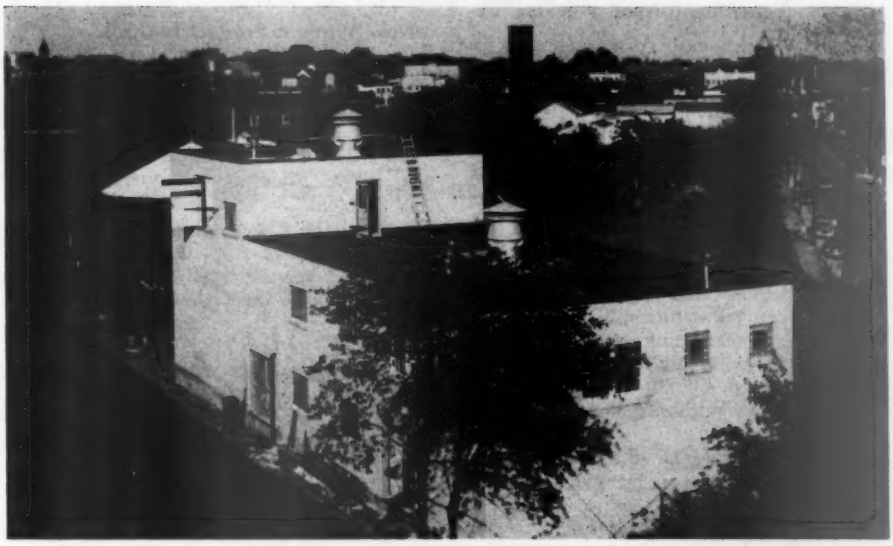
As the paper industry knows, much of the individual and organized effort that has been going on in Wisconsin for 30 years relative to the problem of disposing of spent sulfite liquor, was brought, in 1939, under the active head of the Wisconsin Sulfite Pulp Manufacturers' Research League. All of the sulfite mills in the state, except two small firms, plus one mill from outside Wisconsin, belong and contribute to the group. There are 13 in the league.

Obviously, scientific projects and research have dictated that the public, and even industry, could not be openly informed of the exact nature of developments until they were proven, accepted and protected for the good of the paper industry.

But after rolling for years with the light, but consistent, jabs of the amateur and professional conservationists and the various sportsmen's leagues, some of the Wisconsin sulfite manufacturers suddenly found themselves the target of some thunderous punching that practically held four sulfite mills on the Fox River responsible for all the sad results of stream pollution that comes from concentrated populations and industry.

Public-rousing tricks of demonstration at public hearings, demands for immediate plants to "absorb" spent sulfite liquor, pleas for plugging mill sewers within an arbitrary eight months and much other fancy footwork aimed to impress the voter in Wisconsin put it right up to the mill league to reveal more fully its own genuine concern regarding the problem.

Three advertisements appeared in a series in the local papers of the valley over the signatures of the sulfite firms directly involved in this phase of the movement.



THIS IS THE LAKE STATES YEAST PLANT owned and operated by a group of sulfite pulp mills at Rhinelander, Wis., which is processing half of spent liquor of the Rhinelander Paper Co. mill in making a feed yeast for farmer markets.

The first ad was entitled 'What Is Pollution?" It cited three conditions:

(1) Bacteria in the water; the impurities that endanger human health. They come principally from municipal sewerage. Of all municipalities on the Fox River, only one treats its sewage completely before pouring it into the water.

(2) Algae that live, grow and die as water scum. Acres of algae grow in Lake Winnebago and float down the river causing summer stench.

(3) Oxygen reduction caused chiefly by industrial wastes (not only of pulp mills) using up dissolved oxygen which fish and other marine life need. Spent sulfite liquor contains sugars. This sugar acts to use up oxygen. Then the ad tells 'The Truth About Sulfite Liquor!" and explains that it is a sterile substance and is an entirely different matter from treating sewage.

The second advertisement is entitled "A Practical Problem" and explains the 30-year search for a better way to dispose sulfite liquor; and says that to assail the industry is like condemning science for not solving cancer; that money is being spent on research and experimental plants.

The third page-display drives home "The Logical Approach."

This reveals the four continuing projects on the top priority list of the sulfite industry's staffs of scientists: (1) destroying sugars with yeast, (2) evaporating and burning, (3) vanillic acid production and (4) sulfite liquor for road binder. This message finishes with a terse statement about "Where the Yeast Project Now Stands."

Positive Results at Yeast Plant

Timed to this factual approach to the public audience has been a releasing of details about the operation of the Lakes States Yeast Corp. plant at Rhinelander, Wis. This information will be of real interest to the industry at large.

In the months to come industry will be hearing positive figures and more conclusive reports of the success and possibilities of the yeast project.

The Wisconsin league has taxed its members about 15 cents for each ton of sulfite pulp to carry on their scientific researches and the pilot and experimental plants. This provided about $65,000 per year for this work.

In order to carry on with these projects,

Wisconsin Sulfite Group of Mills To Try Out New Evaporator on Spent Liquor

A stainless steel Swedish type of sulfite liquor evaporator is to be installed at the Interlake mill in Appleton, Wis., of Consolidated Water Power & Paper Co., to test out a new method of boiling and burning spent liquor. The equipment is said not to scale easily, thus might solve a historic problem in attempts to evaporate and burn the conventional calcium-base sulfite liquor.

At a two-day Appleton meeting of the technical committee of the Wisconsin Sulfite Pulp Manufacturers' Research League, the trial was announced and it was stated that the Interlake mill would furnish the liquor and the research league will furnish engineers. Henry Rothschild, technical director of Kimberly-Clark Corp., is chairman of the league's technical committee.

The Wisconsin State Chamber of Commerce declared against bills now before that state legislature which would halt river-dumping of waste and urged continuance of present control methods until scientific studies could point out economically feasible remedies.

the levy on the members was upped and reached a figure of 27½ cents for 1949. Another item was a separate $500,000 contribution for the building of the Rhinelander plant. This recently went into operation and is located alongside the Rhinelander Paper Co.

The Lake States Yeast Corp. plant operates on but half of the sulfite liquor spent from the rated capacity of the Rhinelander mill, or the effluent from a 50-ton capacity.

Building and equipping this first commercial scale plant was expensive. It had to be commenced on the drawing board. It had only the inconclusive experiences from a pilot plant at Appleton, Wis. It required the planning, designing and fabricating of parts and equipment never before manufactured by industry. Use of high-alloy metals contributed to the cost.

Already those that developed the installation can tell sulfite mill men that to build a plant using this process will cost about $10,000 per daily ton of sulfite pulp capacity served by the yeast plant or upwards of one million dollars for a 100-ton mill.

Probably after a year of operation some concrete answers can be given to the major questions these industry experimentalists are trying to resolve.

It is too early to know what percentage of sugar can be removed from the spent sulfite liquor. The chemicals for dissolving wood are not the offenders against fish life. Instead it is the dissolved wood sugars which feed the minute organisms in the streams.

At the Lake States plant the yeast feeds on and thus digests this sugar. The yeast is not a product to utilize wood wastes. It is a by-product of the need to eliminate the organism growth in the stream.

It was necessary to breed a special strain of Torula yeast organism to accomplish this conversion of sugar in sulfite liquor to yeast. This is one of the many delaying actions that the general public aroused by political aspirants and even sincere conservationists, knew nothing about until the Wisconsin league took to the press in its own rightful defense.

Description of Process

The sulfite liquor goes into a vat where the yeast plants multiply. Fluid is drawn from the bottom of the tank with its high content of yeast. By centrifuging, this is concentrated into 15% yeast cream. This cream is dehydrated on heated rollers producing the yeast product that is being tried as stock feed. It looks like a corn meal and contains plenty B-complex vitamin and all but one of the amino acids considered essential to stock feeding.

But still the question to be answered is whether this will eliminate enough sugar to do the good hoped for against stream pollution. The objective is to pipe into the yeast plant 90% of the most concentrated waste liquor from the pulp mill blowpit before dilution with wash water, and to assimilate 90% of the sugar from the liquor that is "vatted."

Other questions: What of the quality of the yeast for feeding? Is there enough market to take this product when a number of sulfite mills adopt a program like this if it has been proved-out? Disregarding somewhat the cost to the mills of operating a yeast plant, can the sellers of mixed feed pay a price that is equitable? The processed yeast feed now brings about 10 cents a pound, which is less than its cost on today's unsteady output.

New Vitamin Product Is Goal

The Rhinelander yeast is known as torulopsis utilis. Already the pilot plant at Appleton is being changed over to make a try at another yeast product that will help, if successful, to eliminate the sugars in sulfite. An important vitamin product is the goal.

From the 1949 assessment a pilot plant will be built at Appleton to try again on another disposal method. This centers around a new Swedish-type evaporator of stainless steel that may be used for the evaporate-and-burn system. Previously calcium in the liquor has fostered too much scale.

The other two projects still receiving top attention are the making or derivatives of vanillic acid; and the producing of a road binder that will have a wide market at a competing price.

Book on Fodder Yeast Economics Is Published

The Washington State College Bureau of Economic and Business Research, Pullman, Wash., has just published a bulletin entitled "The Economics of Fodder Yeast From Sulfite Waste Liquor."

"We will be happy to supply individual copies free of charge," says J. A. Guthrie, director of the bureau." Requests should be addressed to Dr. Guthrie at the State College of Washington."

VICTORIA MEETING PLANS

Six Papers to Be Presented

Over 300 Canadians and Americans are expected to participate in the first joint international industry meeting ever held by superintendents and technical men in the west, set for May 20-21 at the Empress Hotel in Victoria, B. C. As a matter of fact, this is the first meeting of the kind ever held on the continent except for the Canadian-New York superintendents and a recent mechanical pulping session in Maine.

On the first day—Friday—men's golf for 18 holes and a women's 9-hole tournament will tee off simultaneously at different points on the Colwood course, eight miles north of Victoria, a course which is almost a replica of the famous St. Andrews course in Scotland. Both nights there will be dancing and the women will tour the world famous Butchart's gardens.

Canadian and U. S. committeemen got together in Seattle recently to plan the meeting. Henry Ostrowski, technical superintendent, Pacific Mills, chairman of the Western Branch of the Canadian Technical Section, and Rad Russell, assistant superintendent, Everett Pulp & Paper Co., Coast chairman of the American Superintendents, headed the groups. Les Hartman, master mechanic, Weyerhaeuser Timber Co.'s pulp mill, Everett, and John Guthrie, superintendent, British Columbia Pulp & Paper, Woodfibre, are convention co-chairmen.

Howard Urquhart, assistant to the resident manager, Powell River Co., will be moderator of the paper panel and Sid Collier, assistant superintendent, Puget Sound Pulp & Timber Co., will be moderator of a pulp panel—both on Saturday —and each featured by three papers.

PULP MEN FLY TO BIZONIA

As this issue went to press, well informed sources in New York stated that apparently Bizonia is in a pulp buying mood again, and this was borne out by the fact that representatives of several companies had flown to Germany on the week of March 7.

One informant, well posted on European affairs, believed that Bizonia had indicated an immediate need for at least 30,000 tons "of Canadian pulp" and some U. S. producers were assuming this might be translated into "North American pulp"—hence the hegira eastward.

Swedish producers were understandably alarmed at the apparent invasion of the German market. Thus there seemed the possibility—although no one would say the probability—that an odd cross-shipment of pulp might take place: U. S. and Canadian pulp to Europe; Scandinavian pulp to North America. Some keen observers were wondering whether this would upset the price structures which were by way of balancing up after a period of adjustment.

Canadian Meet in Niagara Falls

Delegates to the annual summer meeting of the Technical Section, Canadian Pulp and Paper Association, will have an opportunity to visit some of the pulp and paper mills near Niagara Falls, Ont., during the sessions in that city June 1, 2 and 3. Niagara Falls is an important papermaking center and its adjacent mills produce paperboard and specialties as well as newsprint.

FIFTY MILLION CAN'T BE WRONG!

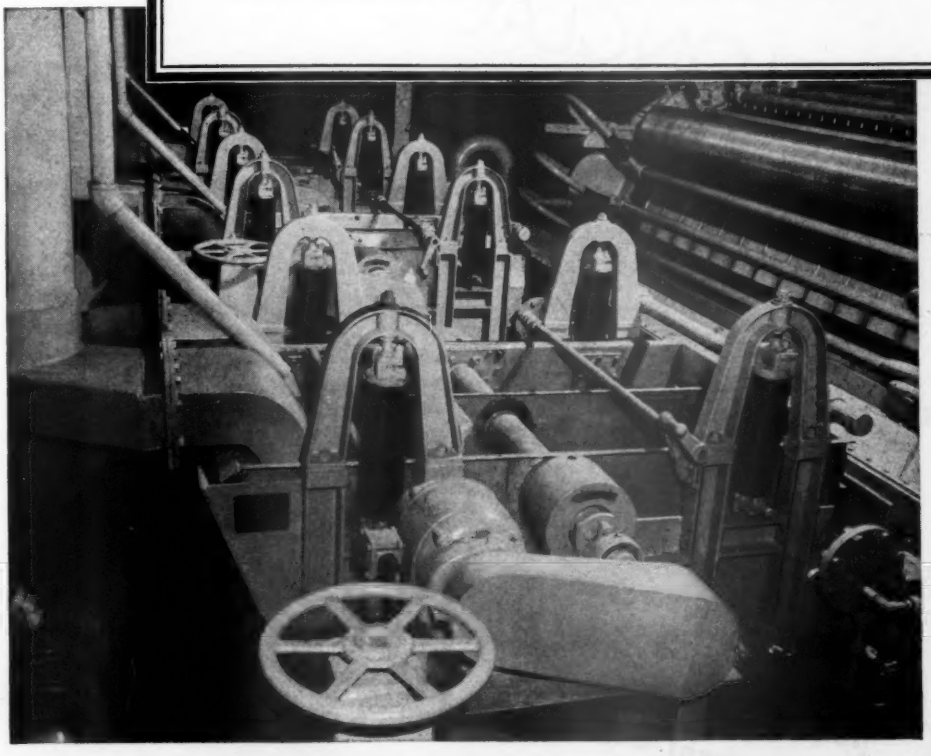
Close to fifty million pounds of pulp per day are now being put through

BIRD JONSSON SCREENS

That takes in everything from the coarsest stocks, knotted by Jonsson Screens, to the finest, with Jonsson Screens equipped with slotted plates.

Jonsson Screens turn out good, clean stock and lots of it per Screen per day, with negligible loss of fibres in the rejects. They handle stocks of relatively high consistency. They are very economical to operate.

May we submit recommendations and estimates?



At WEYERHAEUSER,
Longview, Wash.

This neat, compact Jonsson Screen installation is delivering brown stock to a washer. Totally enclosed, submerged inlets and smooth screening action with almost totally submerged screen plates do away with foaming troubles. The stock is delivered to the washer free of knots, shives and chips. High washing efficiency, uniform drying and maximum black liquor recovery is assured. Jonsson Screens are rapidly becoming standard equipment ahead of brown stock washers.

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

KIMBERLY-CLARK OPENS CANADA'S NEWEST SULPHATE PULP-MILL

Congratulations
LONGLAC
PULP & PAPER
COMPANY LIMITED
The Long Lac Pulp and Paper Company (subsidiary of Kimberly-Clark Corporation of Neenah, Wisconsin) has recently completed their new 300-ton bleached sulphate pulp mill at Terrace Bay on the northern shores of Lake Superior. This complete project in what was so recently Canada's wilderness, is already producing top quality bleached sulphate pulp at designed capacity — a high tribute to the management and engineers responsible.

SHERBROOKE - IMPCO BROWN STOCK (Black Liquor Recovery) WASHERS AT LONGLAC PULP AND PAPER COMPANY LIMITED —each line consists of three 8'x 10' Sherbrooke Washers with Vibratory Pre-Knotter and Pulpers.

BLEACH PLANT OPERATING FLOOR AT LONGLAC PULP & PAPER COMPANY LIMITED showing Six 8'x16' Sherbrooke Washers. ALL BLEACHERY MECHANICAL EQUIPMENT SUPPLIED BY SHERBROOKE MACHINERIES LIMITED.

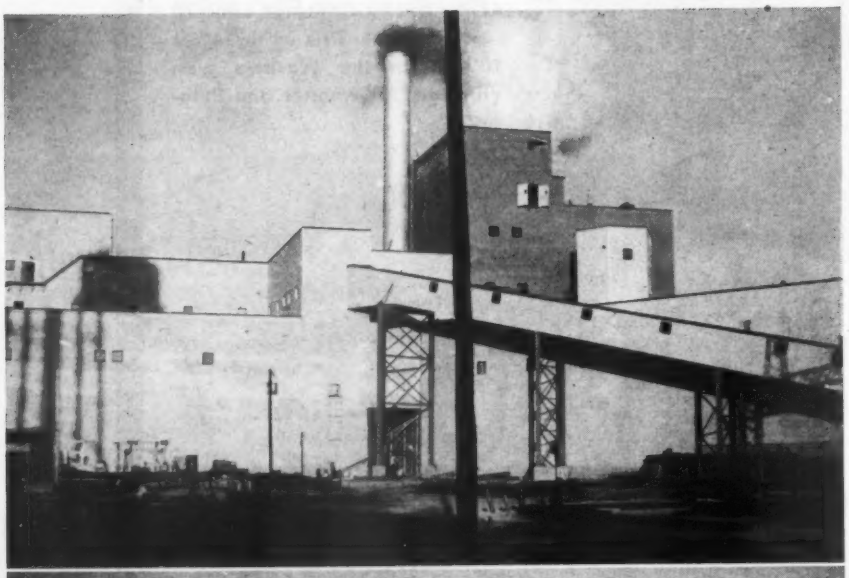
SHERBROOKE MACHINERIES LIMITED

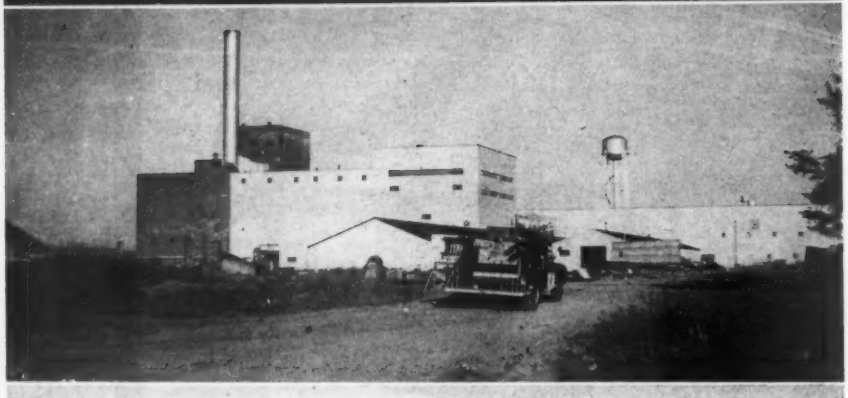
HEAD OFFICE AND WORKS

SHERBROOKE QUEBEC

Story Behind LongLac

Visit to Terrace Bay Reveals Why K-C 'Planned it That Way'





EXCLUSIVE GENERAL VIEWS of the new LongLac Pulp & Paper Co. at Terrace Bay, Wis., taken during recent visit by PULP & PAPER editor when mill was starting up.
All mill buildings have non-combustible Johns-Manville sidings and built-up bonded type roofs, except recovery, boiler and lime kiln buildings which are of brick. Note location of brick power and recovery plant—these buildings are in exact center of mill's steam requirements.
In lower view, note how wood piles are separated to decrease fire hazard. From six monitors around each pile (not upright columns), hoses can pour 10,000 gpm. on each pile.
Below is Link-Belt 4 ft. wide rubber belt conveyor from jackladder to mill, with endless 3,200 ft. belt—1,600 ft. each way.

It's probably a fair statement to say that seldom, if ever, on this continent has the construction of a new mill been preceeded by so much careful planning and elaborate engineering as in the case of Kimberly-Clark's new bleached sulfate pulp mill in Ontario.

If such forethought and painstaking effort is any measure of future success, then certainly this newest mill in Canada to start operations must surely have assurance of a very bright future.

In 1947, when **PULP & PAPER** first visited the new town of Terrace Bay, hewn out of wilderness on the Northern shore of Lake Superior, the steel work was just rising for the new LongLac Pulp & Paper Co. 300-ton bleached sulfate pulp mill, wholly-owned subsidiary of Kimberly-Clark Corp. of Neenah, Wis.

When a **PULP & PAPER** editor returned recently, one of the most attractive, resort-like mill towns ever built was spread out before him and about a mile away—out of sight and hearing of the town—the first runs of pulp were being made in the new mill. A standard bleached sulfate mill, but with many interesting innovations in layout and operation, was completed, with the last connections being tightened up.

True to the thoroughgoing and distinctive methods of the Kimberly-Clark organization, almost the entire staff of executives and engineers and technicians who were charged with construction and startup of the mill were returning to Neenah—perhaps, some of them to the site of the new Coosa River newsprint mill being built by K-C in Alabama. And in their places, a lesser number of operations executives and technicians moved in from Neenah, where this company has created one of the finest reputations in this industry for training and education of key personnel. A veritable army of 1,800 construction personnel also moved out, leaving an initial permanent Terrace Bay work population of about 400.

As a mill town, Terrace Bay is a sensational standout. **PULP & PAPER** editors have seen every modern mill town on the continent and in their experience, this one is really something to write home about. It is a real estate agent's dream of a park-like development, with curving boulevards and every one of its 224 homes is different in color or design—except two. Believe it or not, these two, built for two friends on the staff, were made exactly the same, "just so there would be an error," according to the Terrace Bay wags!

Latest official figure for investment in

the mill and town is upward of $23,250,000.

The Ontario Hydro Commission, a provincial government enterprise, serving industries and communities on a "pro rata" basis, completed in October the new $12,000,000 Aguasabon River water power project. The new mill and town were then hooked in and began to get 18,000 hp. of the total 55,000 hp. of new power production. The remainder will go to Port Arthur, Fort William and Thunder Bay communities at the head of the lake, and this has come about at a very timely period as all of Ontario looked back on an unprecedented drought and faced serious power shortages.

40-Mile Lake Created

Hayes Lake, a 40-mile long lake, has been created, submerging the old rough motor road to Schreiber, winding 14 miles to the west of the new town (it's only 8 miles by rail). Into this lake from the north a half-year's supply of pulpwood has already been carried by the current of the Aguasabon. This wood has travelled in some cases a hundred miles, first by truck hauls to lake head, then by tug-hauled booms, down 40 miles of the lake, and finally propelled by wind and water until pulled into the flow of the river.

Over 5,500 square miles of timberlands will keep the mill supplied perpetually. Spruce, jackpine, balsam, and poplar are the species used and these must be 8 inches in diameter at base before being cut, according to Ontario regulation. The wood already is piled 90-feet high by a double-arm stacker on the six separate woodpiles in the yard. Wood is cut in four foot lengths and it ranges from 6 to 20 inches in diameter, probably averaging nearer 6 inches.

INTERESTING FACTS ABOUT TERRACE BAY

Interesting facts about places and names at the new LongLac Pulp & Paper Co. mill:

Terrace Bay—the new town—is named for the terraces, or benches, created when waters of the vast aboriginal Lake Algonquin receded and left several lakes (The Great Lakes) in its place. It is 50 miles west of Marathon, 75 miles east of Red Rock, 140 miles east of Lakehead, and a 400 mile drive from Duluth, Minn.

Schreiber—pronounced "Skryber"—is a railroad town which is 8 miles west, by train, from Terrace Bay. It used to be Isbestor's Landing, named for a railroad worker. Lord Schreiber, for whom it was renamed, was a member of the British nobility, who also was a railroad worker.

Aguasabon River means "Black Water" River. To the Indians black water meant a deep river without rapids. "Black" was the railroad's name for the "whistle stop" which was formerly at Terrace Bay, before the new town was built. Aguasabon is the name of Ontario Hydro Commission's power project serving the new mill and town as well as other communities.

Head o' the Lakes or Lake Head is area on the shore at the northwest end of Lake Superior, including Fort Williams and Port Arthur area, principally. Three new pulp mills have been built here in recent years and other mills have expanded. It is one of the most important "boom" areas of this industry in all North America, stimulated by Ontario's restrictions on wood exports to U. S. mills.

Probably back about the time when Noah was navigating his Ark, all the present Great Lakes were just one lake—and its tides lapped ancient shores far to the north of Terrace Bay. As its water receded it left terraces or beaches in some areas. These terraces or beaches are clearly outlined at the LongLac properties and they gave the new town its name. The terraces rise to altitudes at the mill and town sites which are fully 200 or 300 feet higher than the altitudes of the Marathon, Red Rock or other Head o' the Lake mills in this area. There is this much head in bringing water to the new mill and town from a water line extending 1700 feet out into Lake Superior and 35 feet deep at the intake. This water is plenty cold—it will never exceed 10 degrees Centigrade (42° F.)

Perhaps an outstanding achievement at Terrace Bay has been the successful cooperation of private enterprise and government in making the new industry and town possible.

How Site Was Selected

The great amount of testing and research that went into selection of the mill site three years ago is also noteworthy. For years, wood for the Kimberly-Clark mills in the U.S. was driven down the Aguasabon River. The logs were floated out to the Slate Islands, off shore, and there loaded on barges for Green Bay, Wis.

This flow of wood by barge to the Wisconsin mills, through the Soo, ceased over a year ago. As has been reported previously, the Ontario government has launched a program for the development of pulp mills in the province, and the gradual, complete abolition of export of pulpwood to the States. This policy was anticipated by Kimberly-Clark's and other company's projects for Ontario mills.

Because the Kimberly-Clark timber holdings were in this area, it was decided the mill would have to be somewhere in the vicinity of the outlet of the Aguasabon. Six possible sites in this area were surveyed and tested.

This entire area is sandy—in fact, one of the big projects in building the town was bringing in top soil for gardens and lawns. All of the shorelands are water bearing under the sand, and dangerous spots for construction had to be eliminated. The engineers drilled and tested soil for six months in the fall and winter of '45-'46, and found solid rock from 48 to 256 feet below the surface.

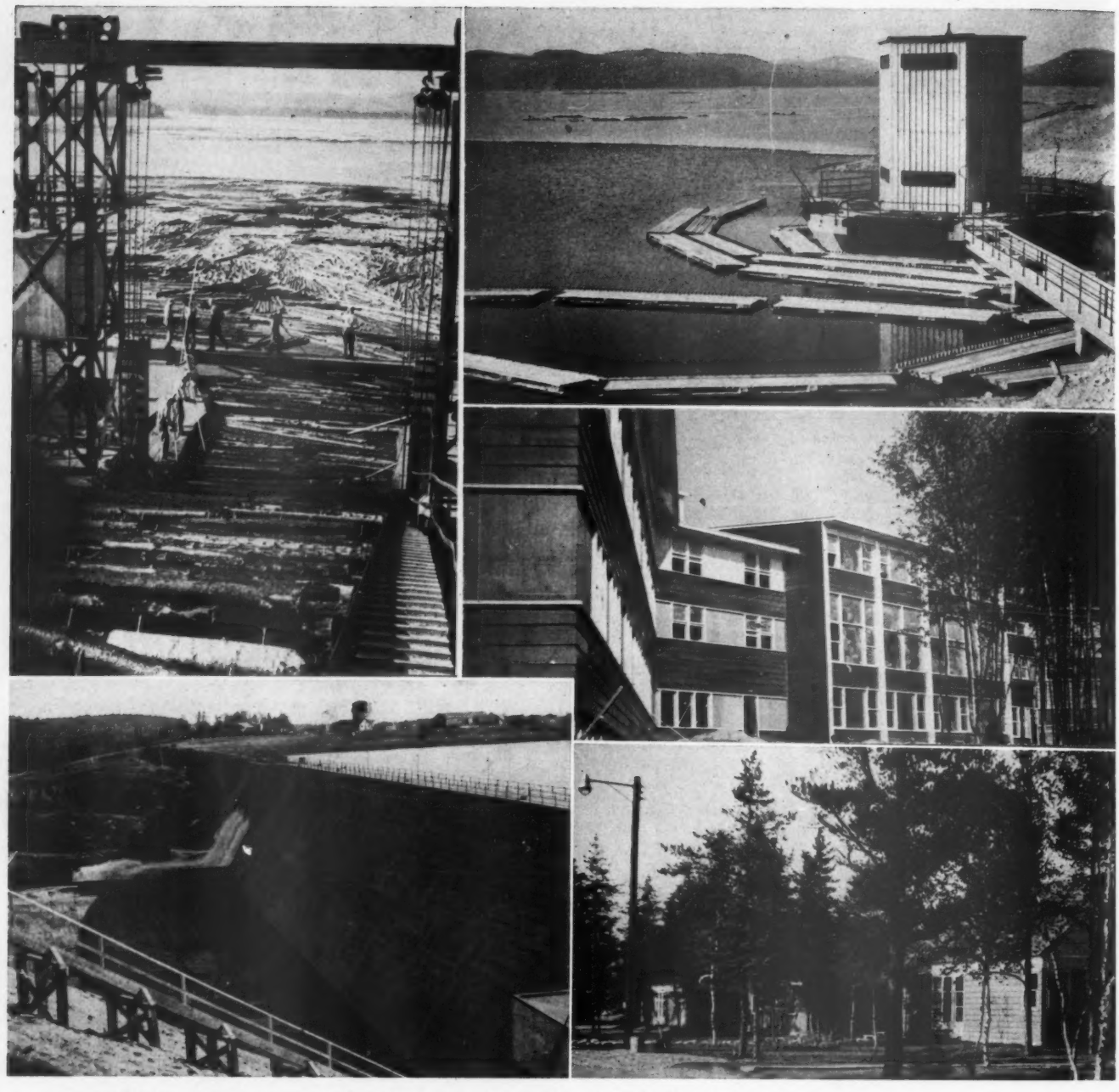
Ordinary concrete spread footings were decided upon for mill foundations, to take the load and spread it evenly. First crews were bunked at Terrace Bay in March, 1946; prior to that, they had bounced back and forth on the rutted road from Schreiber.

Pine trees, especially, and much spruce, thrive in these sandy reaches, and in building the town site every tree that could possibly be spared was left standing. These are not large trees, and do not give too much shade, but there are literally thousands of them in the town, and the result is all the homes have trees in abundance around them and the effect is very impressive.

Living Conditions Carefully Planned

All of the homes in Terrace Bay are shop pre-panel structures and those parts were manufactured right on the

(Continued on Page 42)



PHOTOS TAKEN on 35 mm. film by PULP & PAPER editor at Terrace Bay, Ont., mill of LongLac Pulp & Paper Co.:
Upper left: Jackladder taking 16 ft. long logs. Underwater agitators drive wood onto ladder.
Lower left: Dam at end of newly created Hayes Lake—dam 1400 ft. long; 110 ft. high.
Upper right: View of lake with intake house for tunnel to power plant at Lake Superior. Vertical tunnel 240 ft. deep is at intake; then extends horizontally 3,400 ft. to powerhouse.
Middle right: Modern 54-room hotel with sweeping view of Lake Superior. British Columbia Douglas fir and plywood with plenty of glass are used.
Lower right: One of attractive streets with glimpse of dwellings.

spot. The building company brought in its crews and did all the work right at Terrace Bay. The five or six room houses were put together in eight to a dozen main sections. Rustic carvings of bear tracks, snow shoes, leaves, etc., decorate porches.

Yellow, green, red, blue, and brown colors are lavishly used on the 215 homes for mill employes and nine homes for Ontario Hydro employes. These will be family homes as far as they go, and it is planned to have a large percentage of young families at Terrace Bay. About a half-dozen will be headed by men from the Wisconsin mills and divisions of Kimberly-Clark. More families mean fewer drifters—a better class of workers. Single men will live in dormitories or in the hotel. For the children, there is a brightly-painted, one-story, flat-roofed schoolhouse.

An Indian summer made the Head o' the Lakes a veritable paradise this fall. Temperature of 75 degrees greeted **PULP & PAPER'S** editor on his visit, even that late in the year. But hot summers are followed by long, snow-laden winters. Big trout in the lake, plenty of pike, too; deer, caribou, and occasionally a moose, attract sportsmen, but Kimberly-Clark Corp.'s management realized that in this remote and rugged outpost, a really fine town and community that would be pleasing to their employes and families was also of prime importance.

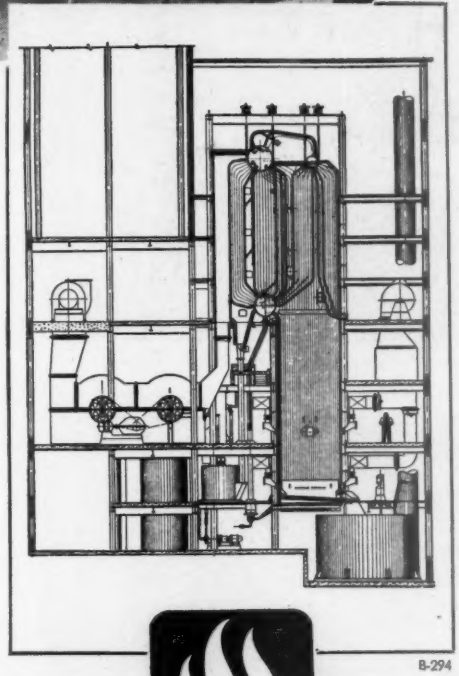
Cooperation Among Ontario Mills

One of the important things that has happened in the Head o' the Lakes region is development of close cooperation and cameraderie among the new and old

(Continued on Page 45)

One of Canada's Largest Recovery Units now in Service at LongLac Mill

The new mill at Terrace Bay, Ontario. The C-E Recovery Unit is housed in the building in the foreground.



B-294

The LongLac Pulp & Paper Company, Limited, subsidiary of the Kimberly-Clark Corporation, recently placed in service their new pulp mill at Terrace Bay, Ontario, Canada.

A feature of this new, modern mill is the C-E Recovery Unit, one of the largest now in operation anywhere. The unit, which was manufactured and installed by our Canadian affiliate, Combustion Engineering Corporation, Limited, is designed to burn 960,000 pounds of black liquor solids per 24 hours – a nominal capacity of 320 tons daily – and will produce steam at 200 psi at saturated temperature.

The C-E Recovery Unit's reputation for efficiency, reliability and operating economy is built on a sound basic design enhanced over the years by the addition of carefully developed improvements. The LongLac unit incorporates these many service-proved advantages.

Combustion Engineering–Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

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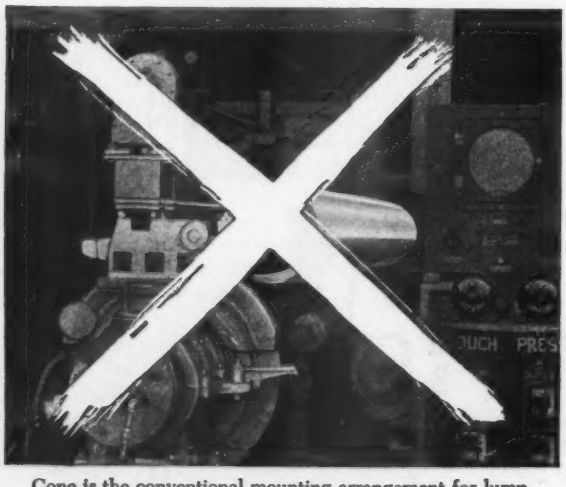
PRODUCTS FOR THE PAPER INDUSTRY INCLUDE RECOVERY UNITS, STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; ALSO PRESSURE VESSELS

PAPER · · · America's 6th Industry

How to Stop "Man-Handling" Lump Breaker Rolls

Lump breaker roll and paper draw roll are raised pneumatically when installing fourdrinier wire with the new Puseyjones arrangement.

Improved arrangement with rolls in operating position.



Gone is the conventional mounting arrangement for lump breaker roll on suction couch. Chain hoist is no longer required. Simplifies wire change.

In the new Puseyjones Machines, the lump breaker roll and paper draw roll are lifted pneumatically for fast, efficient wire changing. Both rolls are permanently supported from the adjacent press frames and can be raised or lowered with a finger touch. Check these important advantages:

(1) Reduces down-time for wire change
(2) Eliminates use of crane
(3) Eliminates all man handling
(4) No chance of damage to the rubber roll

This is just one of the many design improvements and labor saving devices in the latest high-speed Puseyjones Machines. That's why you are years ahead with a new Puseyjones. Let us give you full details.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U.S.A.

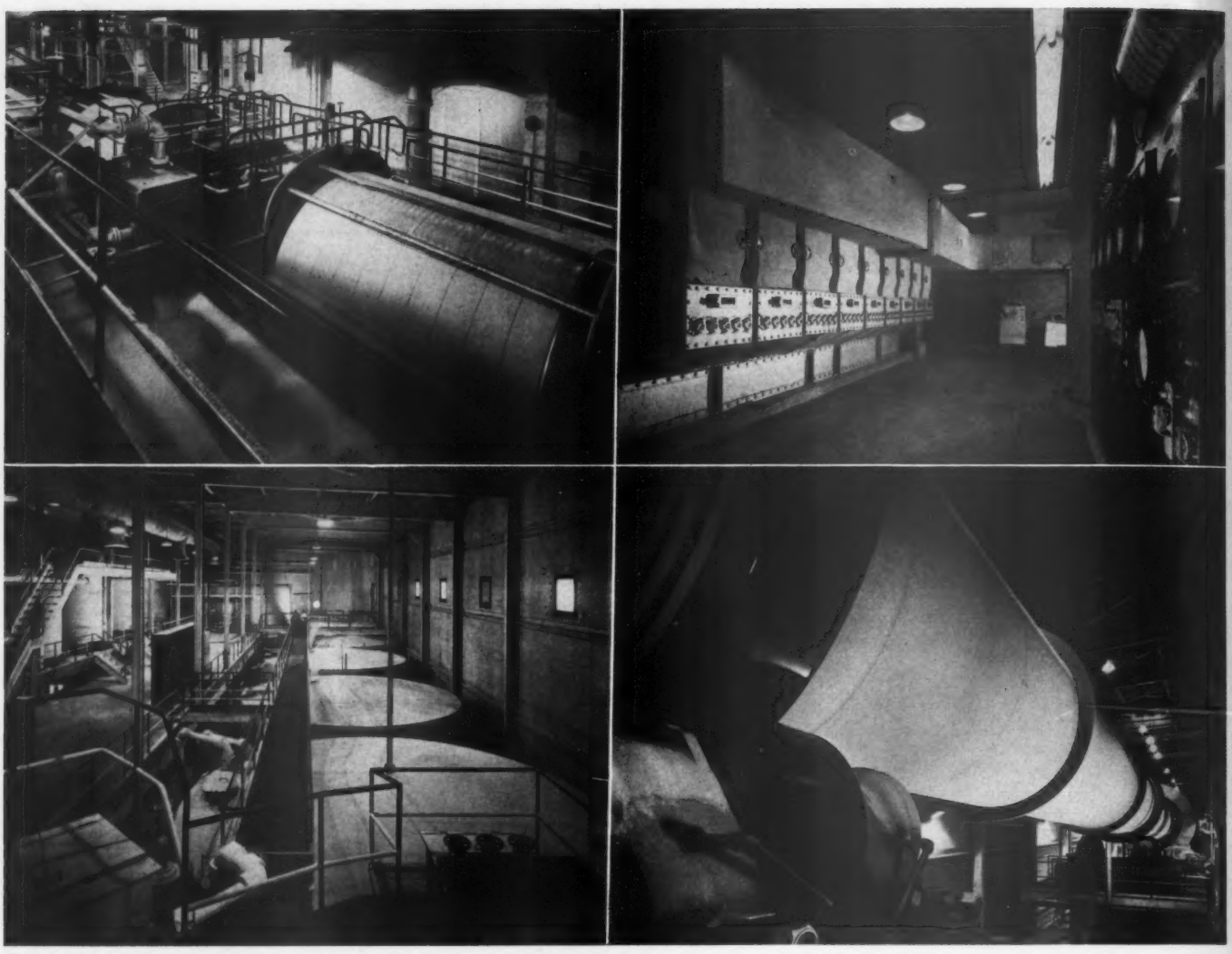
THE SIGN OF TRADE MARK SUPERIOR QUALITY

mills. These mills and managements realize they must work together for the best solutions of problems which are common to all of them—especially in regard to improvement of living conditions and labor matters. For instance, it is probable they will unite forces to bring in first-class entertainment. This fall the Kenny orchestra, one of Canada's outstanding dance bands, was brought to Terrace Bay. This was considered a great achievement.

In the following account, we do not intend to merely present a list of equipment in this mill, but only to dwell upon some of the interesting arangements and

VIEWS OF EQUIPMENT AT LONGLAC PULP & PAPER CO.:

1. **The five stage bleach plant operating floor with machinery manufactured by Sherbrooke Machineries, Ltd., of Sherbrooke, Que. Six 8 x 16 ft. washers, of which four are of stainless steel, are shown, all of them with stainless hoods. Note roominess, especially in foreground where more stages could be added.**
2. **Two lines of brown stock washers made by Sherbrooke Machineries, Ltd. In back of control panel is blow tank capable of holding contents of four digesters.**
3. **One of two PML-Kamyr Wet Machines supplied by Paper Machinery, Ltd., of Montreal, with S. F. Flakt Dryer in background. Fairbanks-Morse scales and Baldwin-Southwerk presses follow the dryer. Each machine has working width of 136 inches.**
4. **Dry end showing Flakt Dryer in distance and heavy type slitter and cutter, from Paper Machinery, Ltd., and conveyor system to storage, with baler in foreground.**
5. **Three suspended 12 by 45 ft. barking drums which can be run submerged, dry or with sprays. Time-cycle hydraulically operated shears control feed to drums. Sorting conveyors in foreground.**
6. **First floor below the top operating floor of bleach plant. Shows sealing water system used on various washers. Storage tanks for calcium bleached liquor are in view.**



SOME NEW PROCESSES AT LONGLAC PULP & PAPER CO., Terrace Bay, Wis.
UPPER LEFT—Oliver thickeners remove water after screening. Brown stock is screened on twelve 28-plate screens, each having two sections of 14 screen plates. The short section is capable of very high screening capacities. UPPER RIGHT—Front of Combustion Engineering recovery unit and its panel board. This is largest C.E. recovery unit in operation at present time. Estimated production is in excess of 350 tons of pulp and 150,000 tons of steam per hour.

LOWER LEFT—Operating mezzanine of causticizing building, showing control panel, sludge pumps and causticizing tanks, all a part of the Dorr system. It is unique from layout sense, permitting ease of operation and cleanliness, as explained in this article. LOWER RIGHT—Lime sludge from causticizing is recovered as calcium oxide in 300 x 8 ft. Allis-Chalmers lime kiln. Equipped with 50 ft. of chain section, it is oil fired, but is being equipped to use producer gas. The kiln is supported at five points with trunnions, is driven with four-speed motor and is equipped with auxiliary gasoline drive in event of power failure. It was put on high foundations to eliminate nuisance of a pit at hot end.

diversions from the usual layouts of practices:

Wood Handling and Preparation

Just alongside the 1400-ft. long dam and spillway at the end of Hayes Lake is the millpond and here is the jack ladder and splasher house. Agitators in the water drive wood onto the ladder over an apron extending 25 ft. outward. The jack ladder will take wood up to 16 ft. in length and saws cut the logs brought to the top of the ladder into four-foot lengths and they tumble down four parallel chutes to a long rubber belt conveyor.

This conveyor, built by Link-Belt Co., is equipped with a 4-ft. wide, 3200-ft. long continuous rubber belt running 1600 ft. in each direction, supplied by Dominion Rubber Co. This long belt transports wood to a corner of the mill, where it can be fed into the wood preparation plant or carried by another 2800-ft. of rubber belt to the wood yard and up the two 100-ft. high arms of a huge Dominion Bridge stacker. Link-Belt also supplied chain conveyors for the woodroom.

Outdoor rubber belting has frozen up when not in use, so it couldn't be started up, in previous uses of it in the North Country; but here is a case where the Link-Belt and LongLac engineers believe they can benefit from others' experiences.

The long, outdoor rubber belt from jack ladder to mill will not be operated during the freeze. From November to May the lake and rivers will be frozen over and only the wood in the yard piles will move into the mill. But at LongLac the rubber belts are designed to withstand and freeze and because of a "good wrap" and use of larger pulleys, they are expected to start up again without difficulty whenever halted.

A demonstration of fire fighting equipment on the huge wood piles was an added "feature event" on one night of **PULP & PAPER'S** visit. In this fire drill 10,000 gallons a minute of water was poured on one of the piles from six hoses at monitors around the pile. Wood pile fires are the most feared menace in mill operations like these and as a safety measure, LongLac has its winter store of wood split up into six piles, each a safe distance from the others. Hoses are placed for most effective action.

Wood preparation equipment is of the late type widely used in the East. Green paint generally used makes a clean-looking woodroom. There are three drum barkers and conveyors to a single Waterous Carthage-type 88-inch, 10-knife chipper. Ty-Rock chip screens make possible considerable fiber recovery and conservation of wood.

A very good example of the sharing of

Offices and representatives in 60 cities

in the United States, Europe, Latin America, Africa, and Asia

PULP
PAPER

BULKLEY, DUNTON & CO., INC.
BULKLEY, DUNTON PULP CO., INC.
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BULKLEY, DUNTON CELLULOSE EXPORTS, INC.
BULKLEY, DUNTON PAPER (FAR EAST) CO. INC.
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We have seen many changes in the paper and pulp business since 1833. All through these changes our basic principle has remained the same: to place the most suitable product in the most suitable market — so that producers and exporters, converters and consumers may always get the greatest benefit. This policy has brought dividends for all concerned.

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295 MADISON AVENUE, NEW YORK 17, N. Y.

ideas among these new Ontario mills are the six chip storage bins, which were among the last installations to be completed this fall at Terrace Bay. They are duplicates of the bins which have proved so successful at the Brompton mill at Red Rock, Ont., as designed by Stadler-Hurter of Montreal. A rubber belt conveyor at the top of the storage bins feeds chips into three bins on each side. A drawing on this page shows how storage space is shaped: Each bin angles outward and then back inward, with the base more confined and the bottom of each bin is a twin-screw feeder to a Link-Belt rubber conveyor.

There is one-half day's supply of chips in storage. One of the interesting features here is the control set-up which makes it possible to regulate speed of filling digesters. Also, this mill may cook wood species together or separately, with pine and spruce usually cooked together and poplar alone. Wood chips are automatically weighed on a Merrick Weightometer.

Pulp Manufacture

There are six 3,500 cu. ft. digesters made by Dominion Bridge Co. and there is nothing unorthodox about the cooking, it being a conventional direct steam sulfate process.

Generally speaking, ordinary mild steel is being used throughout the mill, especially for fittings, piping and valves, with the idea in mind of finding out this way where the points of serious corrosion will be, if any. Then where there is corrosion on liquor lines, it is probable that stainless steel will replace mild steel. At any rate, is seemed a sensible policy to wait and see before investing in any of higher cost alloys or other corrosion-resistant materials. Stock and white water lines throughout the mill are made of Johns Manville Transite.

There are three stages of washers for pulp washing with six washers in parallel, three on each side. Provision is made for a fourth washer in each line if the LongLac mill ever decided to do more washing. This arrangement is preceded by a deknotter at the feed inlet box to the primary washers. Stock is metered into a vibratory pre-knotter and then to each line of washers. The washers are 8 by 10 ft. size with double shaft intermediate pulpers between stations. These are manufactured by Sherbrooke Machineries, Ltd. Fourteen primary, six secondary and four tertiary flat screens were supplied by Waterous. Oliver United rotary vacuum deckers were selected.

Pulp Bleaching

The bleach plant consists of a five-stage continuous system, the mechanical equipment for which was manufactured by Sherbrooke Machineries, Ltd., Sherbrooke, Que. It is arranged with only one low density stage, all the rest being high density and continuous. As far as the experience of **PULP & PAPER** editors is concerned this seems to be a rather unique set-up for the sulfate industry.

An interesting point in this very fine, well-appointed and roomy bleach plant is that there is plenty of room for additional stages of bleaching if that is ever desired.

The continuous bleaching sequence at LongLac is: 1st, low density chlorination; 2nd, high density caustic; 3rd, high density hypochlorite; 4th, high density caustic, and 5th, high density hypochlorite.

The final hypochlorite stage consists of two (2) towers with an inter-stage washer between.

The washers in the bleach plant were made by Sherbrooke Machineries, Ltd., and are all 8'x16' size. Four of these machines are of type 316 stainless steel and rubber covered construction, and the other two (for caustic stages) are mild steel. All washers are equipped with stainless steel hoods.

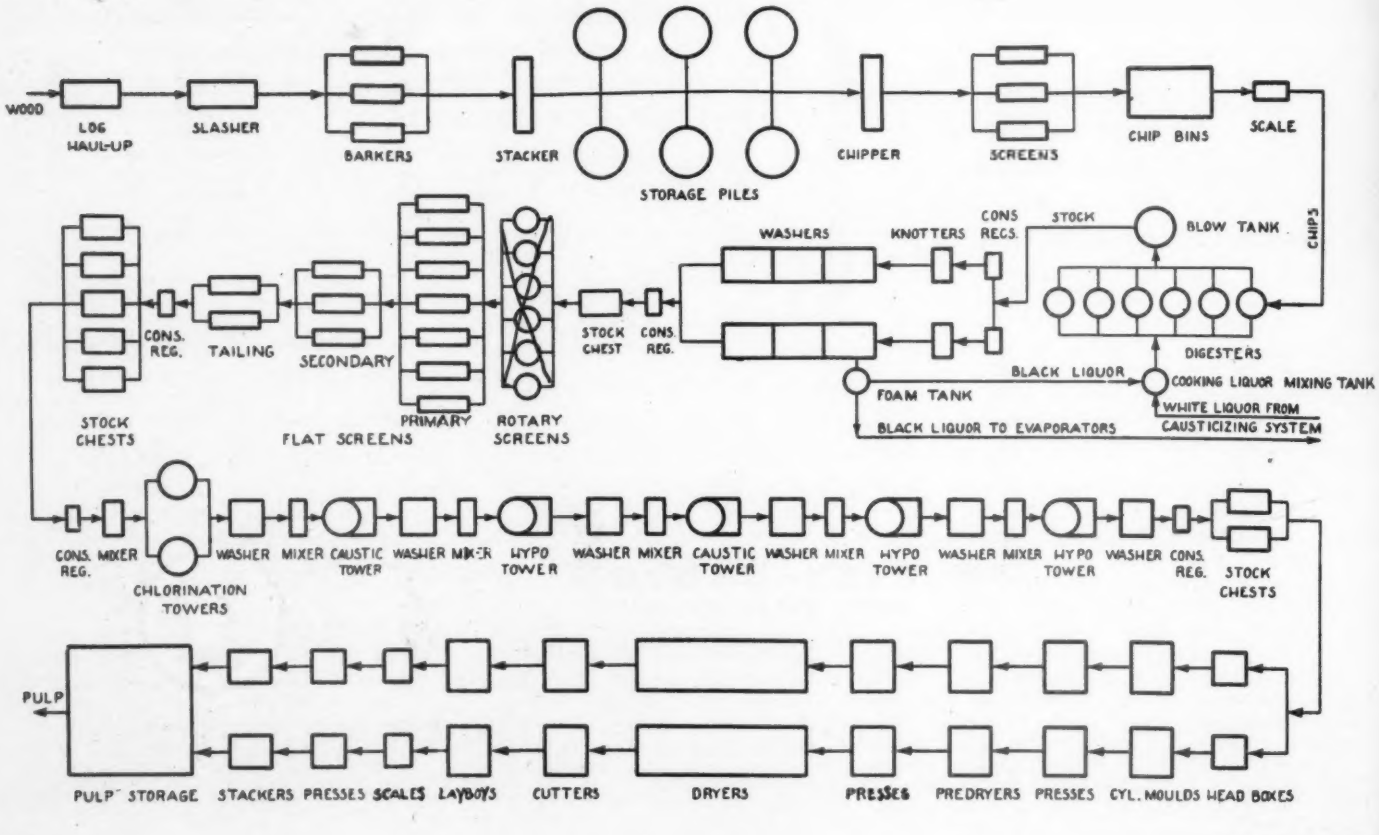
Reliance Electric & Engineering Co. U. S. motors drive the washers and all linings and washer vats throughout the bleach plant are brick tile supplied by Canadian Stebbins Engineering Co., Ltd.

It might well be pointed out here that this operation, as already shown, is quite flexible all the way through the pulp preparation systems and there is ample room and possibility for changes. Every ton of bleached pulp made in Terrace Bay will go to Kimberly-Clark—very likely to be used for products all the way from book paper to the distinctive Kimberly-Clark wadding products.

Pulp Drying

Paper Machinery, Ltd., of Montreal, supplied two patented PML-Kamyr wet machines and S. F. Flakt dryers com-

THIS IS THE FLOW SHEET FOR THE NEW BLEACHED KRAFT PULP MILL of LongLac Pulp & Paper Co., built by Kimberly-Clark Corp., at Terrace Bay, Ontario.



Kimberly-Clark: creped wadding and facial

Although its mills are located primarily in the North and Canada, the Kimberly-Clark Corporation added a southern producer to its string with the purchase of the above plant at Memphis, Tennessee, in 1947. In that year it started up the first creped wadding machine to manufacture the trade-name product of Kleenex in the South. A second machine was added in 1948. Both are Beloit 174" Yankee Fourdriniers, incorporating newest and most efficient design features.—*Beloit Iron Works, Beloit, Wisconsin.*

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plete with their special heavy type slitter and cutter.

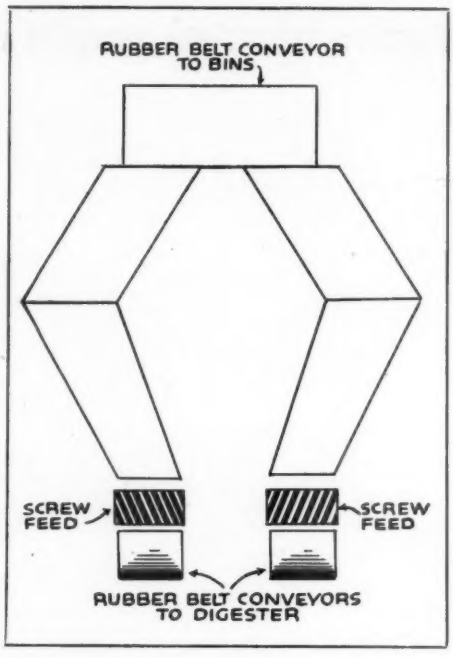
For the two 136-inch wide pulp drying machines, there are conventional type headboxes using baffles and installed at operating level and these were built by Kimberly - Clark. Cutter, layboy and conveyors at the end of the machines are fully automatic. Mathews Conveyor Co. of Port Hope, Ont., provided the layboy and conveying system and Baldwin-Southwark presses are installed for baling the pulp. Fairbanks-Morse scales weigh the production.

These dryer machines are designed for one ton a day of production per inch of dryer but actually they will be able to produce well over the 272 tons a day indicated by that formula. As a matter of fact, the entire mill might be said to be "over-designed" so that production should very easily hit the 300 figure.

The machines reached design capacity without any difficulty. The Flakt dryers carry guarantee or steam consumption of not more than 1.3 lbs. per lb. of water evaporated and steam consumption per ton of air-dry pulp runs less than 2,000 lbs. for this type of machine.

Recovery Systems and Chemical Make-up

Another interesting feature of this mill which is noticeable to any visitor is that here is a streamlined Dorr causticizing system instead of the usual square system. There is a line of four clarifiers with storage tanks directly opposite, instead of having the four units in a square as is common practice. This avoids pumping mud a long distance. The very flexible



THIS IS VERY ROUGH SKETCH showing principle of new type of chip bins first installed in Brompton mill at Red Rock, Ont., and later at LongLac mill at Terrace Bay., Ont., according to design of Stadler, Hurter & Co., of Montreal.

Dorr piping system is designed to assure continuity of operation during partial shutdown for repairs.

The Swenson Evaporator Co. six-effect evaporator here is a new modern type. It has one new feature, similiar to the one at Red Rock, which is a two body first effect. The Combustion Engineering recovery furnace is one of the biggest in the sulfate field and there are also two steam boilers installed by Foster Wheeler Ltd., of St. Catherine's, Ont. These are each of 75,000 lbs. per hour capacity. An interesting point about these Foster Wheeler boilers is that one of them is designed to use coal only but the other one will burn both wood refuse and coal.

Western Precipitation Co. of Los Angeles put in a standard Cottrell Precipitator but here, too, a rather interesting thing has been done as the installation is not removed and at one side of the recovery plant, as in so many cases, but it is actually on the top of the recovery building. It therefore reduces duct lines and its unusual position allows for feeding from it by gravity.

The mark of how carefully and intelligently this mill has been engineered is the fact that the power and the recovery plant is located in the exact center of all the mill's steam requirements. All of the mill buildings have special type noncombustible Johns-Manville sidings which may be noted in the photographs, and these are built upon concrete and steel structures, except in the cases of the power, recovery boiler, and lime kiln buildings. These latter are brick buildings.

Kimberly-Clark feel that there is plenty of credit for all, in the successful completion of the overall project; for Dominion suppliers and banking interests, for the Ontario government and Hydro, and internally in many directions—operating people, engineers, purchasing, woodlands, financial and other staff specialists.

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FUTURE OF SELLING AGENT

by
Edward McSweeney
Treasurer, Perkins-Goodwin Co.

EDWARD McSWEENEY, who discusses role of selling agent in this second atricle especially written for PULP & PAPER.

The modern selling agent is an essential link between pulp and paper mills and their markets. Any discussion of his exact place and function must be predicated on the business philosophy of a specific mill. If the mill is in business to make money, *to sell something at a profit*, as opposed to production as an end rather than a means, then there is a definite place on that company's horizon for the selling agent.

A realistic discussion of the future of the modern selling agent must recognize the fact that hundreds of hat operators, brokers, and just plain fly-by-night opportunists, all claiming to be selling agents, make it difficult to get the true picture in focus. While there is no quick solution to this problem in sight, other fields have developed ways to license and regulate selling agents based on stringent requirements and standards of performance.

Today's competition, keen and even "sharp" in some instances, proves beyond question that the honeymoon is over. If history repeats itself, there will be a lot of busted mills on the hands of creditors unless the selling agent helps them get established on a sound basis. This means much more than selling. If the producer is uneconomically organized or inefficient, his high cost of production may entail a loss instead of profits, no matter how much product is moved before low-cost competition takes its toll. If the item produced has not kept pace with buying habits, or with new technological developments sponsored by more progressive mills, the selling agent has to help bring things up to date. Because his own profit is involved, it is only a matter of intelligent self-interest for the selling agent to become the management advisor and marketing counsel to the firms he represents.

The pulp and paper selling agent is an extension, so to speak, of his client. In order to sell more pulp to the paper mill, he has to help the latter sell more paper at a profit. When selling paper, he often involves himself in selling more printing. So the selling agent must always be one step ahead of his clients.

Particularly during present conditions, the selling agent is a great stabilizing force. Through his first-hand knowledge of all sources of raw material, available production facilities, and existing market conditions, he is able to smooth out the peaks and valleys for the mills he represents.

Equally important, but more difficult to describe, is what some experts call "imagineering." By wedding imagination and engineering, and putting both to work for his client, the selling agent helps to create a *sales personality* which lifts and trades-up an entire organization. For example, we are all acquainted with companies which are favorably known and admired, both within their industry and by the general public. In contrast, other firms are colorless and ignored or unpopular and disliked. Many of these reactions can be traced to tangible, measurable conditions—things that can be gauged, appraised and corrected. It may be anything from the design of a package label to the color of the company's trucks, —from the kind of advertising it does to impression imparted by a visit to the company's home and branch offices. It takes an outside expert to see and evaluate such things,—a fact that all companies do not appreciate.

Further, there are two basic, clearly-definited schools of management—those who seek outside help and "know-how," and those who insist on doing everything from within their own organizations. It takes a big man, a real business leader, to admit that someone outside his own staff—or in it, for that matter—has more competence in a particular line than he. The president of one of America's largest corporations once confided: "My test of a successful manager is simple. Is he willing, whenever the need arises, to pay someone else more than he earns himself to solve an unusual problem?"

The pulp and paper industry has sought engineers and technical assistance, but only in rare instances has it called in management and marketing consultants. By and large, the paper industry does not seek marketing progress. An obvious reason for this reluctance is that most are what the Management man defines as "secondary producers." In brief, they rely for survival on the economic health of the customers they serve. It is a known fact that the mills that are "primary producers" and who meet the ultimate consumer face to face, usually seek outside help.

Feast Era Is Over

The "feast" stage is over; if we are going to eat in 1949 and after, we had better start cooking with gas, and on the front burners. The big fellows have their aprons on already, and their recipes have been tested out by big, successful firms in other industries. Modern management techniques, product engineering, marketing and market research—they use the book from cover to cover.

Most of the big integrated mills recognize the selling agent in buying raw material—pulp. Many, on the other hand, do not recognize him as a selling force for paper, although some have employed the method indirectly by setting up their own integrated sales subsidiaries, handling outside mills. This indirect endorsement of the selling agent's functions proves the latter's value to the independent producer. Integration is a boom-period phenomenon, which in our most recent boom has been accelerated by the tax equation; the record over the years shows that the independent selling agent representing many independent producers can do the most profitable job.

There are four separate phases to the selling agent's operation: 1) the pre-selling phase; 2) the actual selling; 3) service and follow-up practices, and 4) building prestige for the mill. All these

AN EDITORIAL NOTE

In the September issue we published an interview with Edward McSweeney in which he drew upon 15 years of experience as a management consultant to outline some modern management methods through which small mills might help overcome the "feast and famine" cycle that, in the past has characterized the pulp and paper industry in booms and depressions. The article stimulated so much comment that PULP & PAPER returned to Mr. McSweeney with an invitation to give our readers his basic ideas about the selling agent of the future. We were interested in the following comments from a letter he sent along with the manuscript:

"This is not an attempt to explain in detail the functions of any existing selling agent. Rather, it is an attempt to draw a blueprint of some of the services that the modern selling agent should and must offer. Today, any business, big or little, good or bad, must live and grow in a complex world. Top management decisions must be based on expert information from a number of sources. The modern selling agent, if properly utilized by the individual mill, can be catalytic agent in bringing together important information from many sources."

To show that the author believes in taking his own prescription, he is active in the American Management Association; he is a member of the the Research Council of the Lithographic Technical Foundation; a Trustee of Bard College and a member of the Committee on Finance Development of the Massachusetts Institute of Technology. In addition to many other extra-curricular activities, he finds time to serve as a Director on the Board of a number of companies and to lecture at New York University on various phases of the Graphic Arts.

Before joining Perkins-Goodwin, his wide experience in the Graphic Arts brought him in close contact with many problems involved in the manufacture and sale of paper.—EDITOR'S NOTE.

wrap up into one package. Leave out any one, under today's hot competition, and all you have is a grab-bag.

Most people think first of the outright selling phase. Actually, the pre-selling function is every bit as essential. The initial step in pre-selling, and in many respects the most difficult, is Appraisal—what the management consulting profession calls "the diagnosis."

Just as most people hate, or fear, to visit their physician for a check-up, so do all too many business men dislike to call in the business doctor and say, "Thump me, Doc, and see if anything is the matter!" He puts it off until the last, and statistics show what happens in the end.

Only by appraisal, by determing where we are and how we stand, can we tell where we are going and how to get there. Appraisal shows what is needed of the other pre-selling functions, such as financing and factoring, market research, plant and equipment, product research, surveys and reports.

Take Market Research, for example. This is a vague term which covers a lot of ground. Rarely encountered in the paper industry, it has to do with attaining a knowledge of your own market. Who uses your product? In what way? What other users and uses exist? Have you hit saturation in a particular line or in a particular territory? What types and varieties of buyer-resistance have to be overcome? How are competing firms doing this? Are you above par in some areas or products, below it in others, average in the rest? Are you fully informed about new merchandising developments, new sales ideas, new methods and channels or distribution? Or are you depending on inertia, national income, population growth and the general business level to keep you afloat?

Materials and Methods cover quite a different realm. These relate to product engineering, to cost reduction, to improving the product through the use of improved materials, more efficient plant layout, better mechanization and so forth.

Product Development and Product Research are important elements in preselling, and also in the selling and service phases. They make for added prestige, and also for added profits. Testing, innovating, checking up, constantly appraising and re-appraising the worth and acceptance of each item—that is what I mean. To be specific and give one typical case, do you know if, by improving one item which now accounts for, say 10% of your volume, you might increase it to 50% of your sales—and possibly double your profit? Nothing fantastic about this, either: it has been done many times over by concerns which make proper use of product development and product research.

Purchasing and supervision of construction are two ways in which selling agents can be helpful in the pre-selling phase. In both instances the work would be of an advisory nature; in the first, helping the purchasing agent obtain economies which would reflect themselves in the final selling price and the net profit to the mill; in the second, working with the engineers and architects to insure maximum efficiency in mechanization and layout.

VERNON L. TIPKA, who has succeeded late W. G. MacNaughton as Engineer in Newsprint Service Bureau, according to R. S. Kellogg, Secretary. Mr. Tipka was in charge of Fine Paper procurement for Army during war. Lately he was western representative for Bird Machine and formerly was Tech. Director at Hawley Pulp & Paper Co., Oregon City. He was from U. of Oregon and Geo. Washington U.

Definition of Marketing

Marketing can be defined as "the whole subject of moving a product off the end of the production line and fitting it to the needs of the buyer." Thus it is far more than merely salesmanship. Whole libraries have been written on this topic and the surface has only been scratched. Something new is added every day. Marketing is a full-time function for the expert who hopes to remain an expert. In order to give you advice worth taking, he has to keep in touch with new developments in every phase of communications and merchandising; with new sales ideas, promotional efforts; with the progress being made in other fields; with the findings of economists and statisticians, and a host of other factors. The efficient selling agent probably has a marketing consultant working for him and keeping him in trim so he is in a good position to help the mill with its marketing problems, and to obtain special information and expert know-how whenever such are needed.

Obviously, market research, product development and research, and various forms of surveys and reports overlap the selling function. They also reach into the third area—that of service to the customer. Satisfied customers are good people to have around when everybody else is scrambling for orders. And in the competitive kind of market which pulp and paper are getting into, getting satisfied customers doesn't always mean *keeping* them. Phase 3, in other words, has to be as aggressive and as inspired as the two which go before it. In our industry, it is largely a neglected area. Let's get busy and correct this situation.

Prestige is the sum total of all these things. Citing time-tried slogans, it is a case of "Repetition makes reputation," and "The priceless ingredient is the integrity of the maker." If the effort is directed less at obtaining recognition than at obtaining profitable results through scientific means, Prestige is an inevitable by-product. If the right things are done at the right time the credit will come in with the cash.

It is definitely the business of the selling agent to help the mill attain these desirable goals. So long as he does, the selling agent will remain a mainstay of the pulp and paper industry.

AmVis Expanding Cellophane Capacity

Officials of American Viscose Corp., in N. Y., will not comment as to whether new cellophane capacity announced for their Fredericksburg, Va., mill is based, at least in part, on new pulp supply that would be available from its projected dissolving pulp mill in Alaska. Preliminary surveys on the latter mill are being made in connection with a West Coast pulp manufacturing organization. However, close observers of the end-use industry believed that the Fredericksburg expansion could well be a part of the overall AmVis program to relieve the "threatened" cellophane shortage both through production of raw supply and the finished material. Total capacity of the transparent sheet industry is about 220,000,000 pounds a year. DuPont supplies about 75% of this, and AmVis the balance. It has been estimated Fredericksburg expansion will give AmVis about 40% of the business.

New capacity in Virginia will be doubled and officials of AmVis stated that increase of cellophane production is possible "only by adding to an existing plant" if competitive prices are to be met. It was claimed that new processes and production method developed by the Sylvania division of AmVis made expansion possible. AmVis cellophane production will be 100,000,000 a year when Fredericksburg improvement is completed.

That Pusey & Jones Is Now Enroute to Utzenstorf

The new 138-inch Pusey & Jones modern Fourdrinier paper machine, which was first reported being made for a Swiss mill in an article in this magazine last December, is now on its way across the Atlantic —all 700 lbs. of it.

Siegfried Aeschbacher, mill manager of the Utzenstorf Paper Mill, in Utzenstorf, Switzerland, told about the machine in an interview which we published then. His company, one of the most important of the 16 mills in Switzerland, makes groundwood, newsprint and printing papers, and obtains sulfite from its affiliated Attisholz mill, which is the only sulfite mill in that country.

The new machine will make news, catalog and groundwood specialties at speeds up to 1200 f.p.m. It has 72-inch high slice, P-J Flowspreader, Rapidrape wire change, Beloit dual press with two suction rolls, 32 paper and 6 felt dryers, one 8-roll calender stack with pneumatic loading, Pope reel and P-J winder.

It was shipped on a Victory ship built by Pusey & Jones, will be unloaded at Rotterdam, shipped by the Rhine and canals and the last 40 miles by rail. Startup, about July.

HARRY B. MANDERSON, associated with Sir Herbert Gepp's Australian Paper Mills in Melbourne and other Australian centers, passed through Canada on his return from a visit to Sweden. He predicts a future for bamboo and other tropical woods as pulp sources.

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UNIQUE EQUIPMENT IN MICHIGAN

MONROE MILL EXPANDS

It will be well into this year—1949—before the finishing touches will be applied to the modernization of equipment at River Raisin Paper Co., at Monroe, Mich., a short distance south of Detroit. But this three-year program is so far along, so much of the new and rebuilt equipment is already operating satisfactorily, that a visit to River Raisin, producer of a variety of boards, by a **PULP & PAPER** editor revealed that there is much to be brought to attention of readers—in story and in pictures.

The expenditure for this plant advancement amounts to $3,250,000. Combined in this noteworthy progress are: 1) rebuilding No. 3 and No. 4 cylinder board machines; 2) rebuilding No. 5 strawboard machine; 3) new Monel piping; 4) new screens, jordans and stock preparation equipment; 5) new power plant—boiler, stokers, turbine - generators; 6) white water treating system, and 7) corrugating room units for fabricating and finishing.

The Men Responsible

The men responsible for production at River Raisin have taken a keen interest planning and executing the improvements in equipment and buildings. Covering the plant for an article one is quite aware of the active part these men have played.

We refer to Charles L. Wood, president and general manager, and energetic Arthur Goetz, vice president in charge of purchasing; Harry L. Lamb, general superintendent of the paper mills; Mel F. Knack, chief chemist; H. R. McGovern, general superintendent of container plants; Clark Gallagher, superintendent of maintenance, and Jerry Hage, chief engineer.

The importance of the modernization is centered around the cylinder machines. The wet end on these machines have been completely rebuilt by Black-Clawson Co., Hamilton, Ohio, original builders of these board machines.

The No. 4 machine is a 7-cylinder machine that is now 126 inches wide at the cylinder face. It includes a 25-inch Beloit suction drum press. The No. 3 machine, second to be rebuilt, is identical on the new wet end.

Production on these rebuilt machines has been increased 25%. For example, No. 3 can now produce 100 tons of 16 pt.-test liner per day; No. 4, 150 tons of 28 pt.

Black-Clawson is also rebuilding No. 5 machine and this was expected to be in operation again in February. A Beloit suction roll will be added to this machine, too. It will get a new mould and two Bird Jonsson screens.

At River Raisin there has also been a number of new pieces of equipment in conjunction with the feeding of stock to the rebuilt machines.

MEN RESPONSIBLE FOR EXPANSION AT RIVER RAISIN PAPER CO.
Top, left, CHARLES L. WOOD, President and General Manager.
Top, right, ARTHUR GOETZ, Vice President in charge of Purchasing.
Lower, left, WILLIAM MACKLEM, Engineer with Black-Clawson Co., prime equipment suppliers at River Raisin, confers with HARRY LAMB (right), General Superintendent of the mills.

The No. 3 and No. 4 machines each have seven Bird Machine Co. Model 3-A screens. The headbox is a Monel metal fabrication by Brown - Hutchinson and with Shartle Bros. gates.

The mix boxes are Cheney-Bigelow. For each of the two cylinder machines there are six new Miami 2A Shartle Bros. jordans.

Extensive Use of Monel Piping

One of the things that has brought pleasure to the men at the plant is the complete new system of Monel piping and stock lines in connection with the No. 3 and No. 4 machines. Spaces on the lower levels below the machines have been tidied up considerably and everyone is taking a lot of pride in the neat arrangement.

River Raisin called on Brown-Hutchinson Iron Works, Detroit, to supply its type of prefabricated Monel lines. The alloy they use is International Nickel's Monel. More than 2100 feet of 14-gauge in varying diameters were prefabricated to River Raisin specification and measurement by Brown-Hutchinson.

This smooth-welded Monel pipe is connected with ¼-inch Monel flanges and bolted through Neoprene gaskets. These lengths were used for all new white water lines on the No. 3 and No. 4 machines and for the stock lines and complete jordan piping on the No. 4 machine.

Infilco Supplies New White Water System

An important part in the new installation at the River Raisin plant is the Infilco Corp. Cyclator for treating white and waste water from the two board mills before the effluent is discharged into the stream. The Cyclator is a precipitation type unit and is so designed that chemical reaction takes place under controlled conditions.

It recovers about 4 tons of fiber a day. After treatment there is removal of 94% of suspended solids. The fibers are concentrated, then dischargegd for reuse. This operation is almost entirely automatic.

Ten years of research on this problem culminated in the Cyclator, designed with three main objectives: maximum clarification of white waters, maximum recovery

WORKING CLOSELY ON DEVELOPMENTS AT RIVER RAISIN PAPER CO. (left to right): MEL KNACK, Chief Chemist; H. R. McGOVERN, General Supt. of container plants; CLARK GALLAGHER, Supt. of Maintenance; and RAY SHILLUM, who heads engineering and sales for Brown-Hutchinson, suppliers of Monel piping.

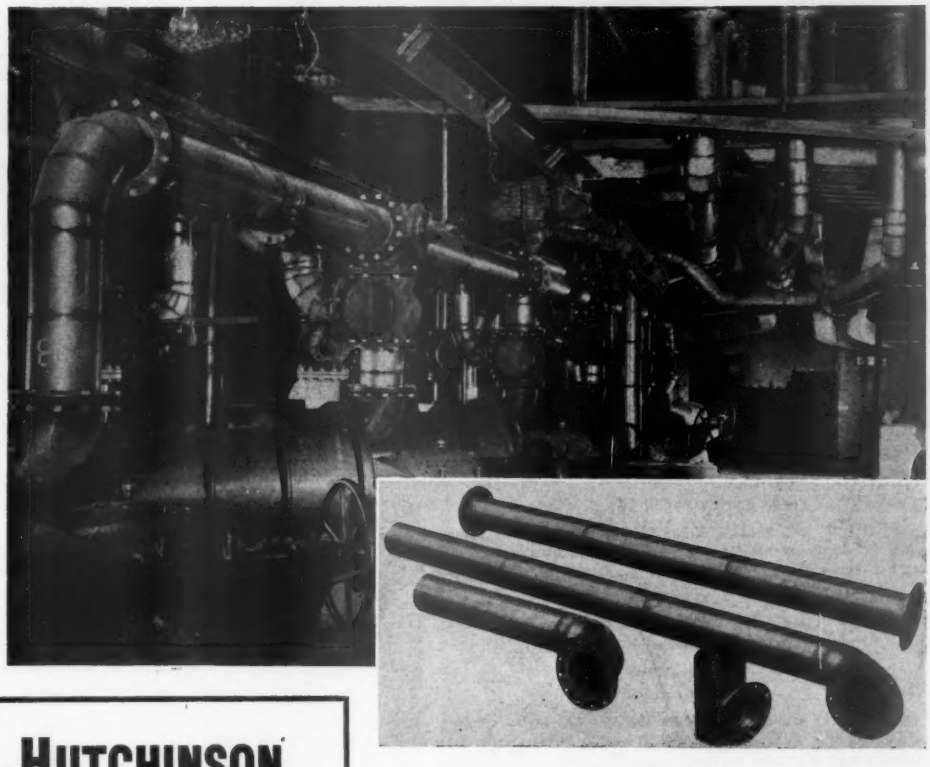
AT RIVER RAISIN PAPER CO.
IT'S *Brown-Hutchinson* PREFABRICATED ALLOYS

TYPICAL VIEW RIVER RAISIN INSTALLATION

The top picture shows the Monroe plant headbox (upper right) fabricated from ⅛-inch Monel . . . the piping is 14-gauge, prefabricated by specially developed machinery in our plants . . . the piping finish is No. 35 finish Monel and ¼-inch plate Monel flanges.

●

Inset — Shows typical pipe prefabrications before leaving our plant for specific jobs.



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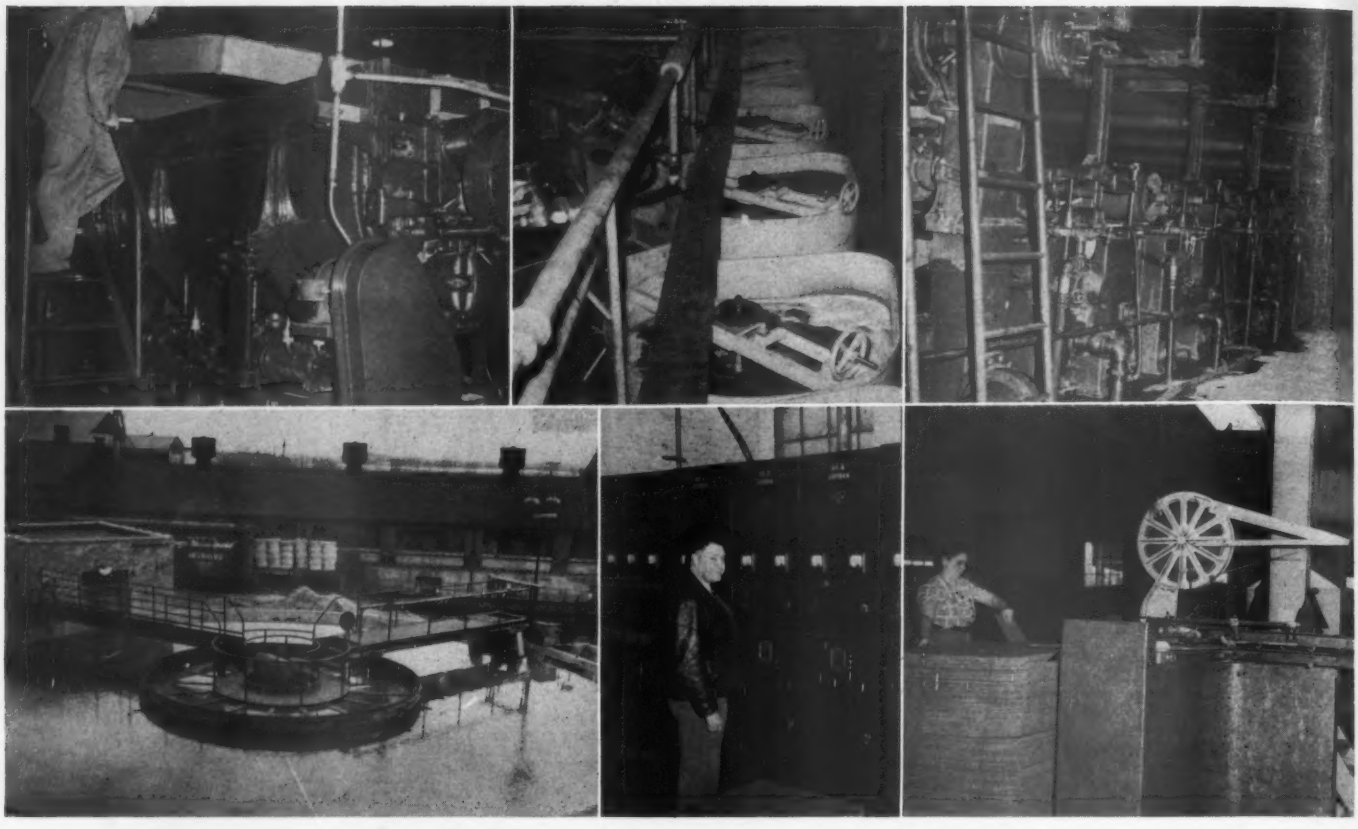
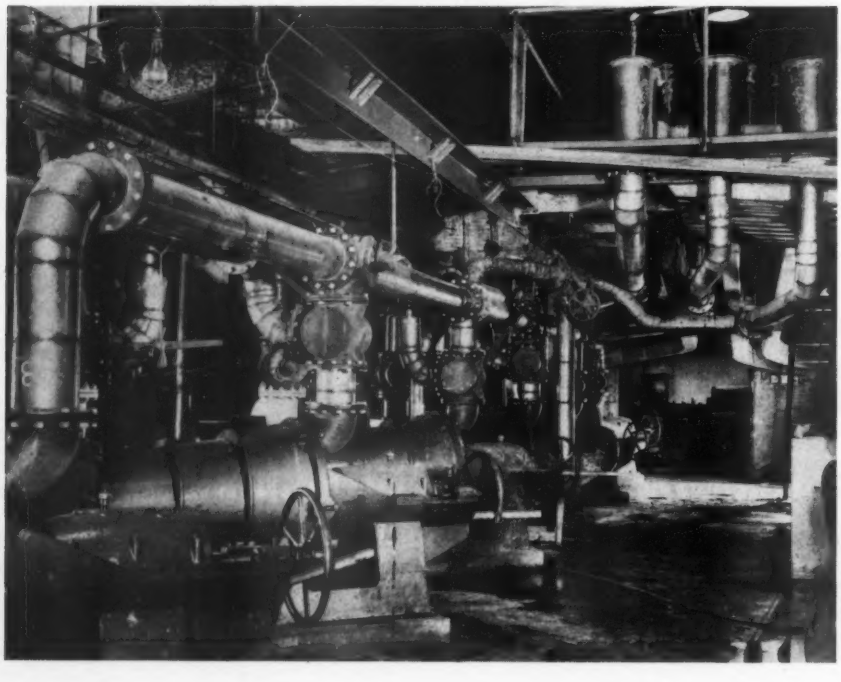


EQUIPMENT AT RIVER RAISIN PAPER CO.

Top row—Left, MEL KNACK, Chief Chemist, gazes intently into one of new Bird 3-A screens. Center, looking down row of Cheney-Bigelow mix boxes. Right, New wet end of machine—built by Black-Clawson Co., Individual units drive the press and dryer sections.

Bottom row—Left, Infilco cyclator for recovery from waste water. Center ring is circulating zone at top and mixing zone at bottom, with circulator drive visible. Scrapers work bottom area between center and outer tank wall. Center, JERRY HAGE, Chief Engineer, has been checking controls for No. 3 machine. Right, Boxart Semi-Automatic Taper. Cases are raised by hydraulic hoist to level of feed table on machine. Cases are folded by operator; tape applied automatically.

NEW MONEL STOCK LINES AT RIVER RAISIN PAPER CO., Monroe, Mich. From Monel-lined headbox, above right, to Shartle Bros. Miami 2A jordans in line at left, are pre-fabricated 14-gauge Monel piping by Brown-Hutchinson Iron Works of Detroit.



of usable fibers and minimum operating costs.

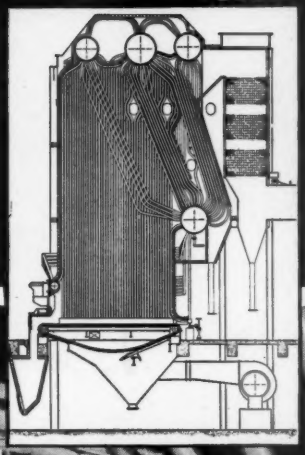
The process starts in the mixing zone where white waters and chemicals are added in the presence of existing solids to which the newly formed precipitates and the fibers will adhere. The white water is coagulated in the presence of a thick slurry of previously formed precipitates having a volume at least twice that of the white water undergoing treatment. This method is important to obtain high fiber consistencies recovered for reuse as well as to obtain the absolute minimum of suspended solids in the finished water.

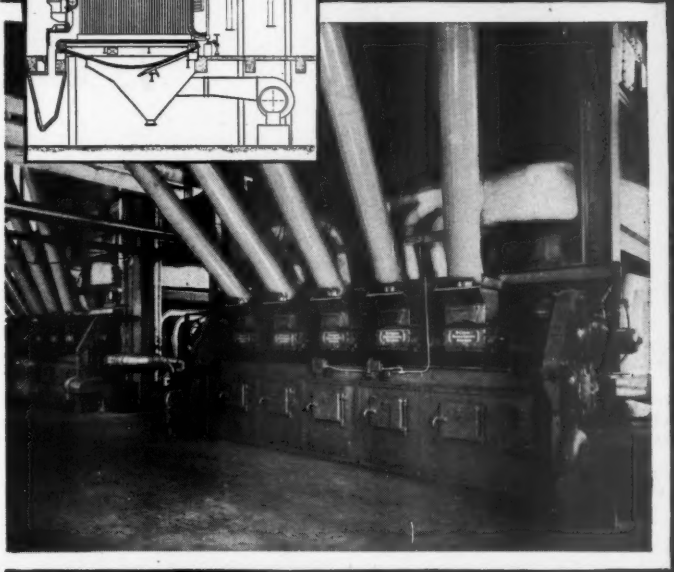
A variable speed circulator pump lifts the coagulated mixture into the circulating zones. These zones consist of two concentric sections with an upward flow in the inner section and a downward flow in the outer. Flow then passes into the clarification zone where precipitates are settled out and clarified water is withdrawn at the surface.

Drives for Board Machines

Black-Clawson spiral bevel gear drives were installed to drive the press and dryer section of the two board machines. These drives are equipped with Fawick Air-flex clutches. A Westinghouse

DETROIT ROTOGRATE STOKERS
Will Cut the Cost of Producing Steam In These Paper Mills





Recent Orders:

American Box Board Co.
Grand Rapids, Mich. (Two Contracts)
Appleton Coated Paper Co.
Appleton, Wisconsin
Chillicothe Paper Co.
Chillicothe, Ohio
Consolidated Paper Co.
Monroe, Michigan (Two Contracts)
Flambeau Paper Company
Park Falls, Wis.
Fletcher Paper Company
Alpena, Michigan
The Great Northern Paper Co.
Millinocket, Maine
Hoberg Paper Mills, Inc.
Green Bay, Wisconsin
International Paper Co.
Panama City, Fla.
Manitoba Paper Co. Ltd.
Pine Falls, Manitoba
Michigan Carton Company
Battle Creek, Mich.
Michigan Paper Company
Plainwell, Michigan
Northwest Paper Company
Cloquet, Minnesota (Two Contracts)
Rex Paper Company
Kalamazoo, Michigan
River Raisin Paper Co.
Monroe, Michigan
Schmidt & Ault Paper Co.
York, Pennsylvania
Sutherland Paper Company
Kalamazoo, Michigan
Thilmany Pulp & Paper Co.
Kaukauna, Wisconsin
West Virginia Pulp & Paper Co.
(Two Contracts)
Charleston, S. C. and Covington, Va.

DETROIT STOKER COMPANY
GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN
WORKS AT MONROE, MICHIGAN • DISTRICT OFFICES IN PRINCIPAL CITIES

helper drive was installed on the suction drum press.

These individual drives get their power from a line shaft mounted below the floor level for each machine.

The main drive for these shafts is powered in each case by a motor-generator of 250-kw and of 300 hp, manufactured by Reliance Electric & Engineering Co. of Cleveland, O.

Controls for each machine are housed in separate rooms. There are eight of these control cubicles mounted to present a single standing panel assembly in each room. Each has a main feeder switch, switches for six jordans and a switch for the main generator.

Because the mill is operating and producing while this expansion program is being accomplished, it is necessary to supply the power to these machines from the existing steam engine and turbine system comprised of three engine units.

New Power Plant

But one of the big segments of this modernization undertaking is the new power plant arrangement soon to go into operation. A new turbine room is almost complete. All the power for the mills will be generated by one large turbine-generator. The new unit is a Westinghouse 7500-kw single extraction, back pressure steam turbine. The 3 small engines now operating will be kept for standby use.

Another part of the power plant modernizing is the huge project of a new boiler, water-feed system, stokers and auxiliary equipment.

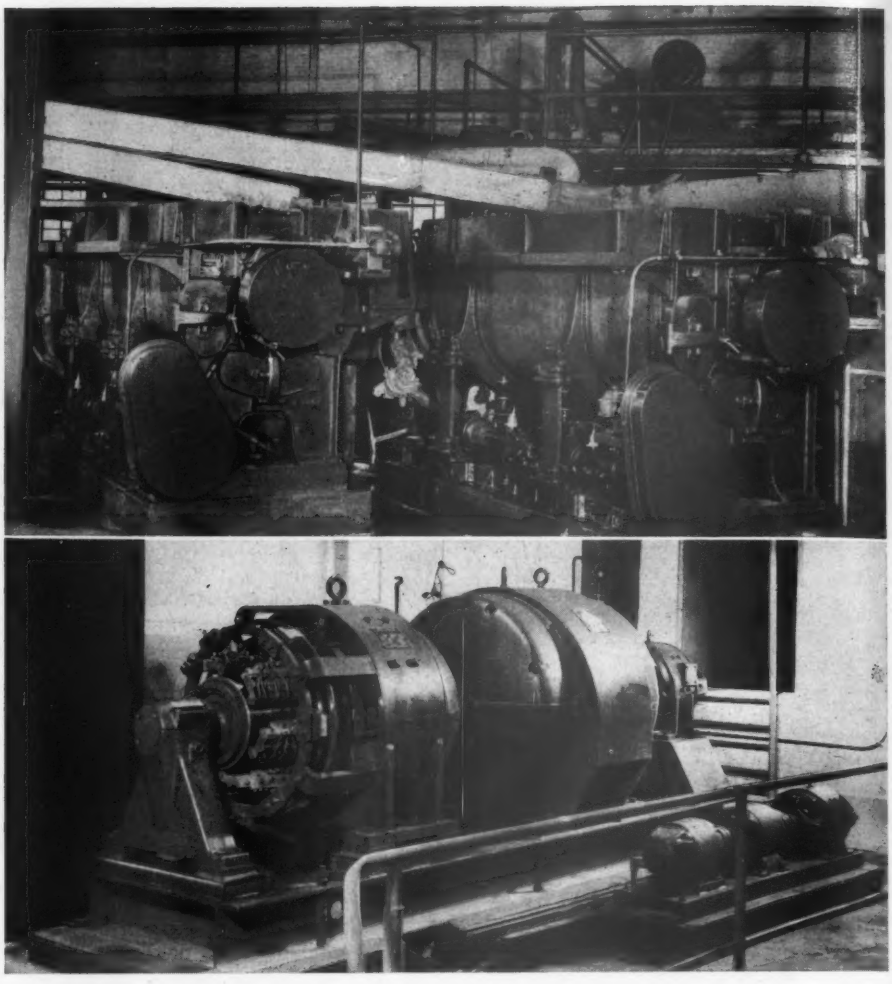
The new boiler is an outside-type. It is a self-contained unit with the exterior erected outside the fire room, without enclosure.

The new boiler is a Wickes, built in Saginaw, Mich. By specification it is: 150,000 lbs. per hour of steam, 1950 hp, 19,500 sq. ft. heating surface, 700 lb. working pressure, at total temp of 750-degrees F. Fire brick is 2½-in. shiplap tile by Dietrich.

The boiler has a Foster Wheeler Corp. superheater and economizer. Aerotec, White Plains, N. Y., furnished the dust collector with aluminum alloy 3 inch tubes. Forced draft, and induced draft, for the boiler is provided by American Blower Corp. The maximum capacity for this draft is 66,900 cu. ft. per min. The blowers are mounted in the basement and driven by a 75-hp motor. The induced draft can reach 116,700 cu. ft. of air per min. and requires a 350-hp motor.

Detroit RotoGrate Stoker

The new stem generating unit will be fired by a Detroit RotoGrate Stoker built by the Detroit Stoker Co., Monroe, Mich. This type of spreader stoker having a continuously cleaning grate that discharges the ash at the front, is of an advanced design, which permits higher burning rates and consequently more capacity for boilers of a given furnace width. The River Raisin Stoker has six feeders or rotors for which a 3 h.p. driving motor with steam turbine auxiliary, is provided.



NEW INSTALLATIONS AT RIVER RAISIN PAPER CO.
Top—Closeup view of Bird Machine Co. screen Model 3-A in action. There are seven Bird screens, each, for the No. 3 and No. 4 machines.

Bottom—One of new 250-kw, 300-h.p. motor generators made by Reliance Electric & Engineering Co. of Cleveland. One unit is on No. 3 machine power system and another on No. 4 system.

The rotors feed the fuel to the furnace and uniformally distribute it, a large part of the combustion takes place above the grate, which in this case has an area of 370 sq. ft., being a little over 23 ft. wide The grate is divided in two sections, each section can be operated independently of the other and is driven very slowly by a Link Belt vertical motorized 1½ h.p., P.I.V. drive. The driving motor for the Rotors is by Louis Allis Mfg. Co., and the steam turbine by Carling Turbine Blower Co. A unique feature of this type of firing is the reburning of the cinders or grit which is carried along with the gases of combustion. To do this, a complete system of cinder reclaiming was installed by the stoker company consisting of abrasion resistant hard iron pipe and operated by a high pressure Buffalo Forge motor-driven fan so as to collect the cinders from beneath the rear boiler pass, as well as beneath the economizer and cinder trap or dust collector, furnished by Aerotec of White Plains, N. Y.

In connection with the boiler, Stephen-Adamson Co., Aurora, Ill., furnished the coal handling equipment. The boiler feed pumps are DeLaval, 5 stage. The boiler control metering is by Bailey Meter Co.

There is an elaborate boiler feed-water softener, heater and de-aereating heater by Permutit. It is a spray-type heater working from 20 to 40 lbs. pressure.

Cummins and Barnard, Inc., of Ann Arbor, Mich., were consulting engineers for the new steam generating equipment.

In the River Raisin Co., container plants many new pieces of fibre container equipment have been installed—at Monroe, and at branches in Cleveland, O., and Washington, Pa.

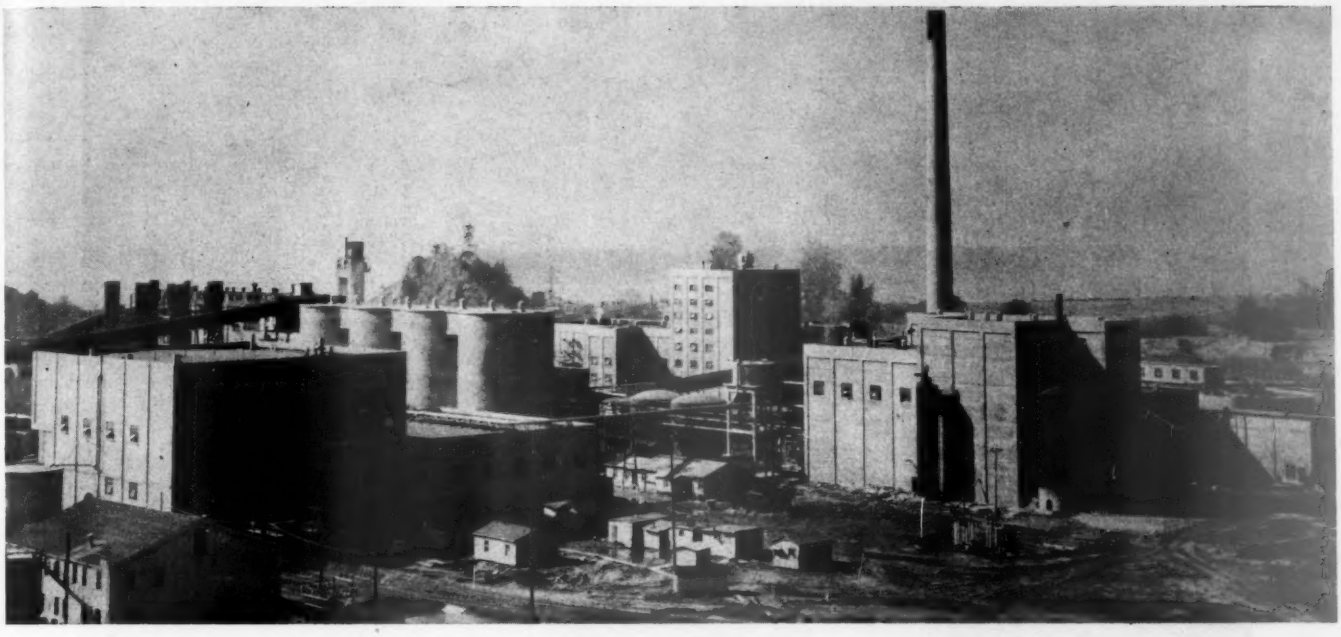
Among the Monroe units are five new rotary cut-off knives built by S & S Corrugating Paper Machinery Co., Brooklyn.

The Langston Company installed two new corrugators. One unit is a 63-inch duplex and one is a 63-inch A flute. There are nine pre-heaters made by Pratt. Each corrugator is equipped with Reliance variable speed drives.

There is an automatic S & S taper folder and 4 new semi-taping machines supplied by Boxart Machine Co. and Universal Corrugating Box Machinery Corp.

WEYERHAEUSER KRAFT MILLS

ONE IS UP—ONE TO GO



EXTERIOR VIEW OF NEW WEYERHAEUSER PLANT AT LONGVIEW
Left to right—The low building houses pulp division research. Bleach kraft building. Kraft screen room in low section. Four round tanks are kraft chip storage silos. Inclined chip conveyor shown to rear of bleach kraft building. Low-roof building to right of silos houses sulfite recovery boilers. High section, kraft recovery boiler; lower roof section, wash room for kraft digesters; higher section, kraft digester building, with power house stack in background. To right of digester house, kraft liquor dept.; lower section of extreme right is part of lime-kiln room; to right of digester house on near side, is gas and steam condensor.

Two new kraft mills for Weyerhaeuser Timber Co. in less than a year—one already making 200 tons a day of market pulp at Longview, Wash., and the other soon to make 150 tons of containerboard at Springfield, Ore.—reveal sharply and dramatically what the new "wood use revolution" means on the Pacific Coast.

Consider these two developments in connection with the new magnesia base sulfite pulp cooking process enabling Weyerhaeuser Timber Co. to recover important heat values as well as chemicals (described in an illustrated article in **PULP & PAPER**, Nov. 1948, P. 38); with the battery of large and small wood-saving hydraulic barkers in two Weyerhaeuser pulp mills and a sawmill, and with the re-logging and pre-logging cleanups going on in the Weyerhaeuser timberlands, and you realize that real progress is being made on the Pacific Coast toward closer utilization of wood. The MgO (magnesia) plant fits into this picture because its heat recovery means most of the wood "left-overs" that provide fuel to power the sulfite mill can now be used to run the kraft pulp mill at Longview.

Important is the fundamental fact that the new application of hydraulic barking in a sawmill results in a large volume of high-quality pulp wood which is completely free of dirt. Formerly, waste wood carried excessive amounts of dirt which could not be completely removed by any type of operation because the saw ground the bark into the wood. By removing the bark before sawing, the outside slabs are clean and represent the highest quality material in the log as far as pulp is concerned.

Weyerhaeuser already operates three sawmills and plywood plant in Longview, two sawmills in Everett and one each in Raymond, Snoqualmie Falls and Enumclaw, Wash., and Klamath Falls, Ore., besides its pulp mills in Everett and Longview. It is adding a sawmill at Springfield, along with the board mill there. At several of these points, as well as at Coos Bay, additional processing installations in the distant or near future years would be entirely in accord with that company's well established program for closer wood utilization.

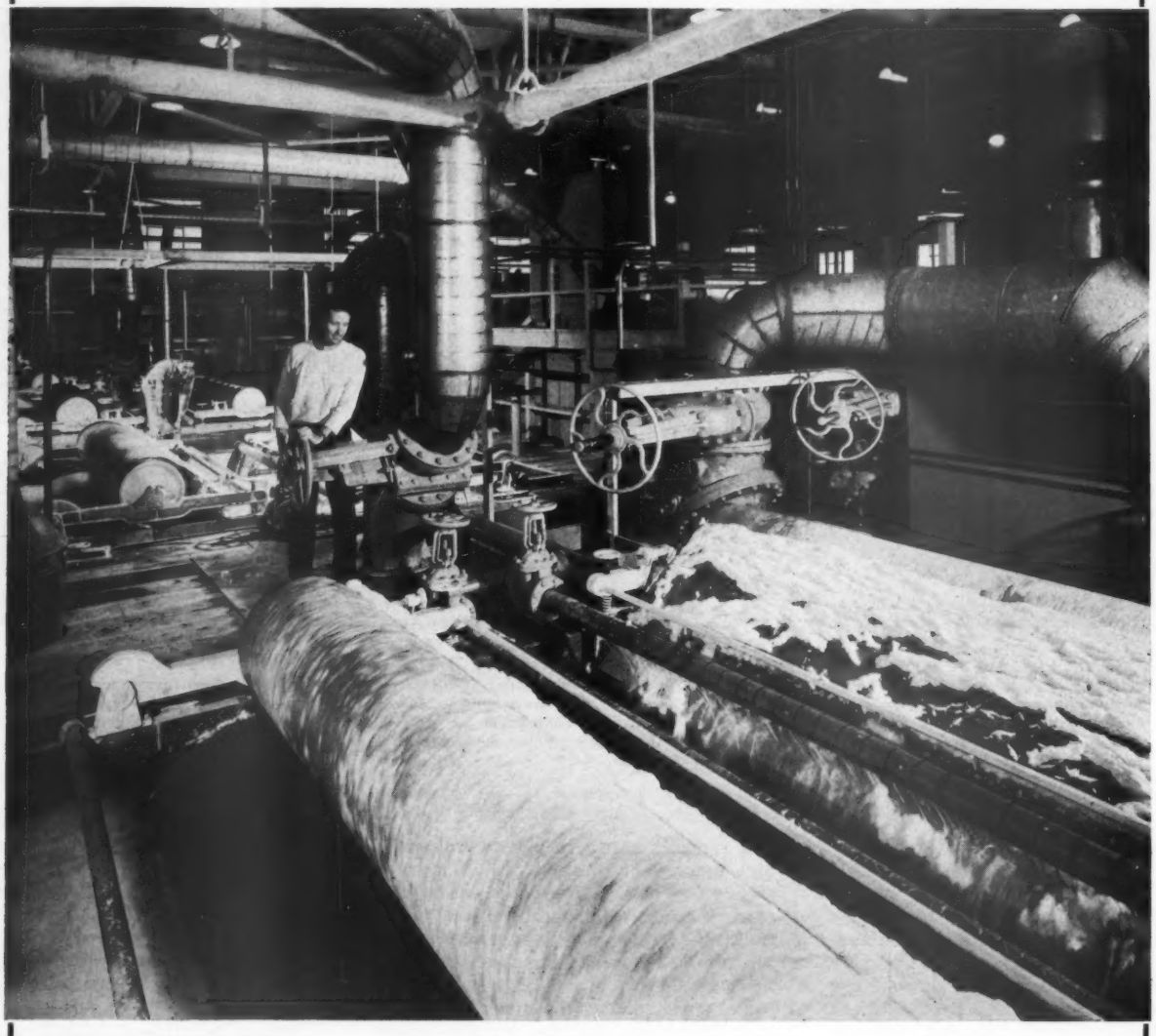
This article deals with new kraft pulp mill in Longview, now making a six-stage bleached quality of pulp. This mill marks a forward step in whole crop use. Bark-free slabs made possible by the hydraulic barkers and small wood from pre-logging are the principal high quality raw materials. Douglas fir is also used to a considerable extent. This permits better husbandry of the spruce and hemlock stands which have always been the principal source of pulp material in that area in the past.

Wood for this operation comes from the 500,000 acre Weyerhaeuser tree farm near Mt. St. Helens which, incidentally, will be visited by this industry's technical men from all over the country when they hold their convention in Portland, Ore., next September.

Personnel Directing Expansion

Howard W. Morgan of Tacoma, Wash., manager of the pulp division; Raymond E. Baker, manager for sulfite and kraft operations in Longview; Gerald F. Alcorn, superintendent of the new kraft mill and former plant engineer in Everett; Donald G. Felthous, plant engineer for both sulfite and kraft in Longview; Thomas W. Stewart, superintendent of the combined power and recovery plants (the MgO plant is in adjoining building to kraft recovery with no wall between), and

PULP DECKERS BY VALLEY



Four 4-foot by 11-foot Valley Double Deckers in Weyerhaeuser Timber Company's Kraft Pulp Mill at Longview, Washington

VALLEY IRON WORKS COMPANY

APPLETON, WISCONSIN

HOWARD MORGAN (left), Manager, Pulp Division, Weyerhaeuser Timber Co.; and RAY E. BAKER (right), Manager, Longview Pulp Mill of Weyerhaeuser.

Svarre E. Hazelquist, technical director in Longview, were the principal Weyerhaeuser operations officials overseeing kraft mill construction and start-up. William H. Haverman is sulfite superintendent.

Otto C. Schoenwerk, consulting engineer of Chicago, and veteran builder of mills, designed and supervised construction of both the kraft mill and the MgO plant. Claude L. Fargo was construction engineer representing Mr. Schoenwerk.

In the research department, much preliminary work was done under direction of Ray Hatch, now retired, and his successor, Dr. Harold Bialkowsky. In connection with construction and installations and start-up, others who had important roles as indicated by their titles are Homer Best, foreman of both sulfite and kraft machine rooms; Carl Fahey, chief electrician; George Wolfe, master mechanic; C. V. McIntyre, pipe foreman; Herbert Peterson, instrument engineer; Arthur Erickson, chief chemist, and R. H. Brayne, purchasing agent for all Longview operations.

Four new foremen working under Mr. Alcorn in the sulfate mill, including experienced men from different regions of the continent, are George Biesse, a veteran at Weyerhaeuser's Longview operations; Hugo Trygg, formerly with Marathon Corp. of Canada, and St. Regis' Tacoma, Wash.; Claude Christensen, formerly with St. Mary's in Florida and St. Regis, Tacoma; and Hugh Wickett, a veteran of Kalamazoo Vegetable Parchment, Ltd., in Ontario, and Ocean Falls, B. C.

Equipment Description

All structural steel fabrication and erection work was done by Isaacson Iron Works of Seattle. A. Young & Son Iron Works, Portland, Ore., participated in the steel fabrication. Bulk of the tanks installed were provided by Chicago Bridge & Iron Works, and smaller principal tanks were supplied by Hydraulic Supply Mfg. Co. of Seattle who did special fabrication of some steel tanks and Willamette Iron & Steel Co. (Portland) providing some tank items. National Tank & Pipe furnished the wood staving used for water mains. McCracken-Ripley Co., Portland, supplied and installed the roofing.

C. C. Moore & Co. Engineers did much of piping design and installation as well as installation of bulk of the heavy equipment.

Principal unit in the machine room is a new Rice Barton Corp. machine with removable type Fourdrinier and Minton vacuum dryer, producing a sheet 150-in. wide at 250 ft. per minute and with a capacity of 200 tons a day. This is the third Minton dryer to go into a Weyerhaeuser mill. In the seven story boiler plant—about 100-ft. high, there is a Babcock & Wilcox 240-ton unit, installed by C. C. Moore & Co. Engineers, Pacific Coast representatives for B&W. Other interesting equipment, with departures from common practice or material use, are described hereafter.

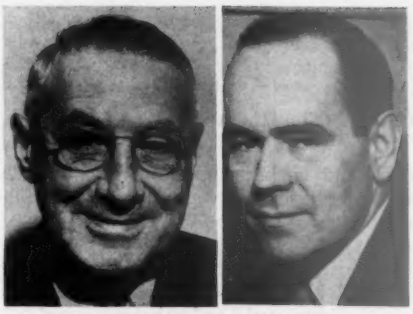
Westinghouse Electric Corp. provided lion's share of motors, of which there are about 800 in the new plant, varying from small fractional horse-power to 350 h.p. Western Gear Works was principal supplier of some 200 reducers used in this operation. There are also Falk reducers in the kraft plant, and some Link-Belt reducers.

Electrical power distribution at the Longview Weyerhaeuser pulp plant was planned and installed by Western Electrical Construction Co., Portland, Ore. For performance, and maximum independence of various plant components, radial distribution system was used. Any circuit can, in emergency, be killed without affecting remaining circuits.

The plant distribution system, including 13.8 K.V. tie line, required over 10,000 feet of shielded pre-assembled, self-supporting cable. This aerial cable system was designed for reliability, simplicity, and economy. According to authorities of the electrical field, this is the largest industrial installation of self-supporting aerial cable at any plant in the United States. It carries three-phase, 60-cycle, 13,800-volt current. The cable, covered with synthetic rubber, will stand 15,500-volt current.

Power distribution at the company's new pulp plant at Springfield will be handled through the same type system.

Instrumentation, in the manufacture here of kraft pulp, is carried on extensively. In fact, H. J. Peterson, instrument engineer, said this installation is "about as close to automatic control throughout as



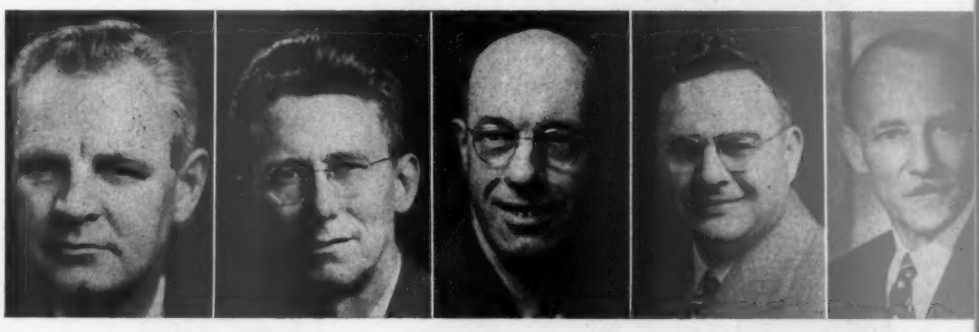
OTTO C. SCHOENWERK (left), Consulting Engineer, designed the new Weyerhaeuser plant at Longview. GERALD F. ALCORN (right), is Superintendent of the Longview Kraft Mill.

is practical, using instruments to fullest extent that was considered economically feasible." Bailey instruments are used in the boiler plant. Foxboro equipment, bought from Bumstead-Woolford (Portland), is used in the kraft pulp mill; and Leeds & Northrup (San Francisco) instruments for lime kiln. Lime, saltcake, and chips are continuously and automatically weighed on Merrick weightometers. Pulp weighing is by means of Toledo scales; and practically all of the corrosive fluids are measured by Fischer-Porter rotometers. Leeds & Northrup equipment measures and controls pH. Brown instruments, torque recorders and clarifiers, are used in the causticizing plant.

The operation of the kraft mill will be recorded and controlled through the use of an extensive chart system, which was developed many years ago by the Weyerhaeuser sulfite mill and which has been a great assistance in producing a high degree of uniformity in their pulp. Because of the methods that have been devised, Weyerhaeuser was able to make a uniform high-quality pulp.

The following report is an account of equipment and their uses all through the kraft operations of cooking, washing, screening, concentration of liquors, burning of liquors, and treating of molten residue and other chemicals. Before going into detail, however, it may be said that considerable amounts of stainless steel are used at points of high corrosive susceptibility. Not counting castings, there were

LEADERS AT LONGVIEW (Left to Right) WILLIAM H. HAVERMAN, Sulfite Supt.; SVARRE E. HAZELQUIST, Technical Dire
THOMAS W. STEWART, Power and Recovery Plants Supt.; R. H. BRAYNE, Purchasing Agent; PAUL F. MIESCKE, Office Mana



four railroad carloads of stainless steel sheets used in the MgO and the kraft pulp plants together.

Stainless Steel Included

Four carloads of fabricated stainless steel and a large amount of stainless valves and fittings were installed in the kraft plant. The stainless sheets were mostly Alleghany Ludlum, bought through and fabricated by Alaskan Copper & Brass Co. and Northwest Copper Works, Inc. ESCO, Crane and Lunkenheimer provided stainless valves and fittings, and Northwest Copper Works, Inc., furnished fabricated stainless steel Fabri-Valves. Robertson protected metal housing covers the long chip conveying belts at this mill. Carthage Machine Co. 10-knife chippers were installed including three 65-inch and one 49-inch machines.

Four concrete silos, 48 feet in diameter and 60 ft. high, store the thousands of units of chips flowing in from the sawmill conveyor lines. They are of slip form construction with a poured concrete roof and are provided with rotary discharge feeders to remove chips from any desired point or points in the silo. There is an automatic Link-Belt tripper and Link-Belt conveyor above chip storage. Storage is provided for approximately four days operation at the sulfate mill.

The new mill has five welded (Combustion Engineering) steel digesters each 40 ft. high and 11 ft. in diameter, the first they have made. Fibre Making Processes, Inc., fitted them with circulating systems, pumping strained liquor from the bottom to the top of the digester through tubular heat exchangers and supplied blow steam heat recovery system. These digesters are housed in a concrete building, each with a capacity of about 35 tons of wood chips. Temperature is raised to about 350° Fahrenheit and maintained at that peak for two hours, with pressure about 110 lbs. p.s.i. Foxboro controls are in the digester building. Hydraulic Supply Co. of Seattle supplied tanks and did considerable stainless steel fabrication for the new mill.

The mixture of pulp and liquor is pumped from the blow tank through Bird Machine Company Jonsson knotters. The rejected material is passed on to a disc refiner, where it is broken up and returned to the Bauer Refiner system. From there it passes over a series of three Oliver Ringvalve 8x14-ft. washers where the black liquor is removed and pulp washed.

The kraft washers are fitted with a hood and exhaust system engineered and

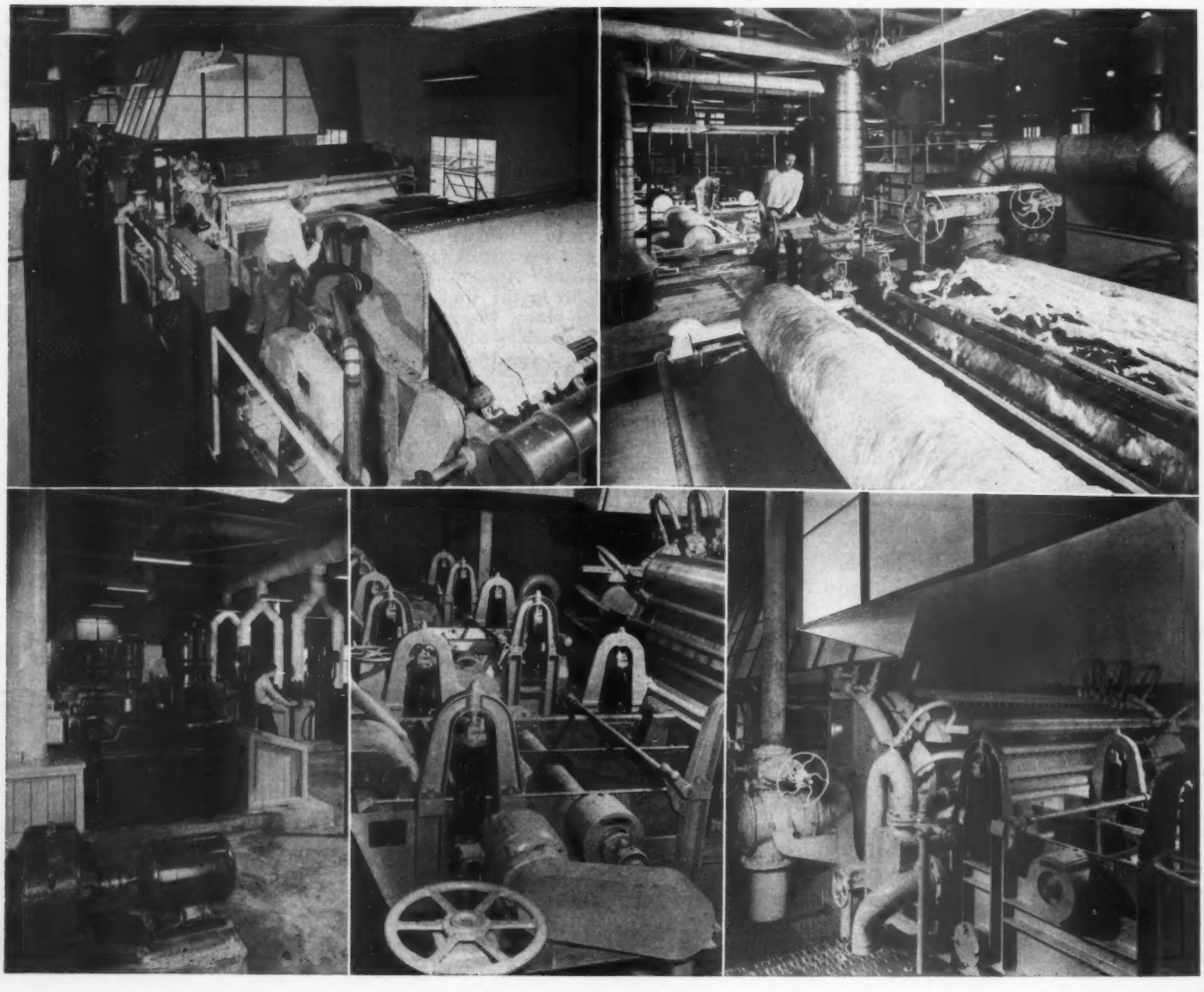
EQUIPMENT AT LONGVIEW—

Upper left—Row of Oliver United Filters washers in kraft bleach plant. There is a washer after each of six rows of bleach engines. Hoods were designed and installed by Drew Engineering Co.

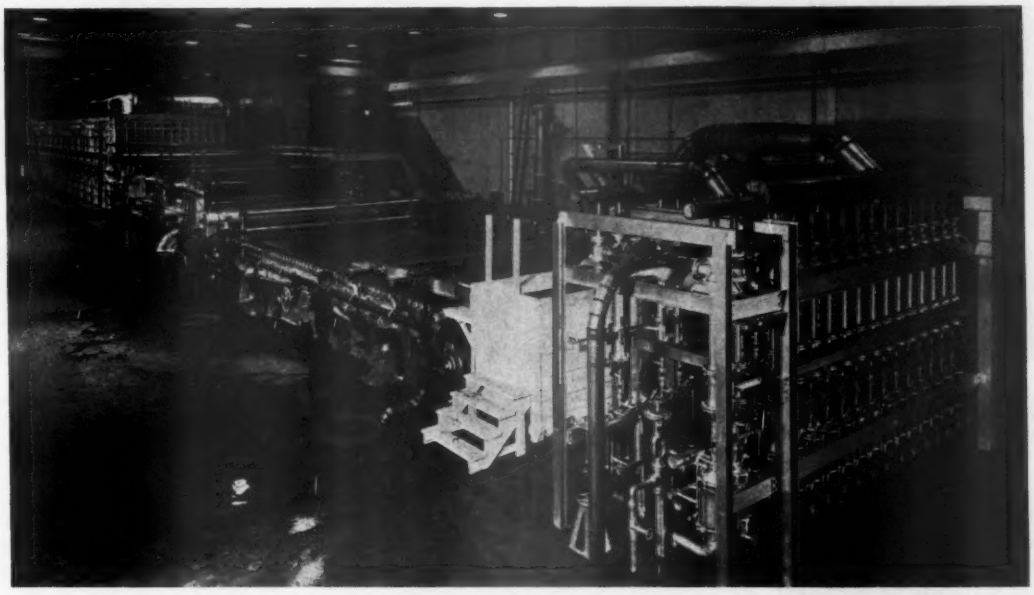
Upper right—Four 4x11 ft. Valley Iron Works double deckers in kraft pulp mill. Stainless steel was by Northwest Copper Works.

Lower row (l. to r.)—View of Western Gear equipment (furnished by James Brinkley Co.) in kraft bleach plant. Western Gear supplied 17 high-density bleachers and 5 low-density.

Bird Jonsson knotters (lower center) are ahead of Oliver washers (shown at right). These washers are in kraft pulp mill.



AND NOW THE THIRD RICE-BARTON MINTON DRYER



Rice-Barton Corporation machine with removable Fourdrinier and Minton vacuum dryer producing sheet 150 in. wide at 250 ft. per minute and capable of producing far more than 240 tons per day.

Completion of the new 200-ton bleached sulfate pulp mill at Longview, Washington, by Weyerhaeuser Timber Company, Pulp Division, marks another important step in the company's progress toward maximum utilization of its forest resources.

We are, of course, proud that once again a Rice-Barton machine with Minton vacuum dryer was selected to meet the demand for additional production. Rice-Barton machines with Minton vacuum dryers at the company's sulfite pulp mills in Longview and Everett, Washington, played their part in the critical war years when the Weyerhaeuser Timber Company was called upon to provide high grade wood pulp in amounts far beyond rated capacity of its mills.

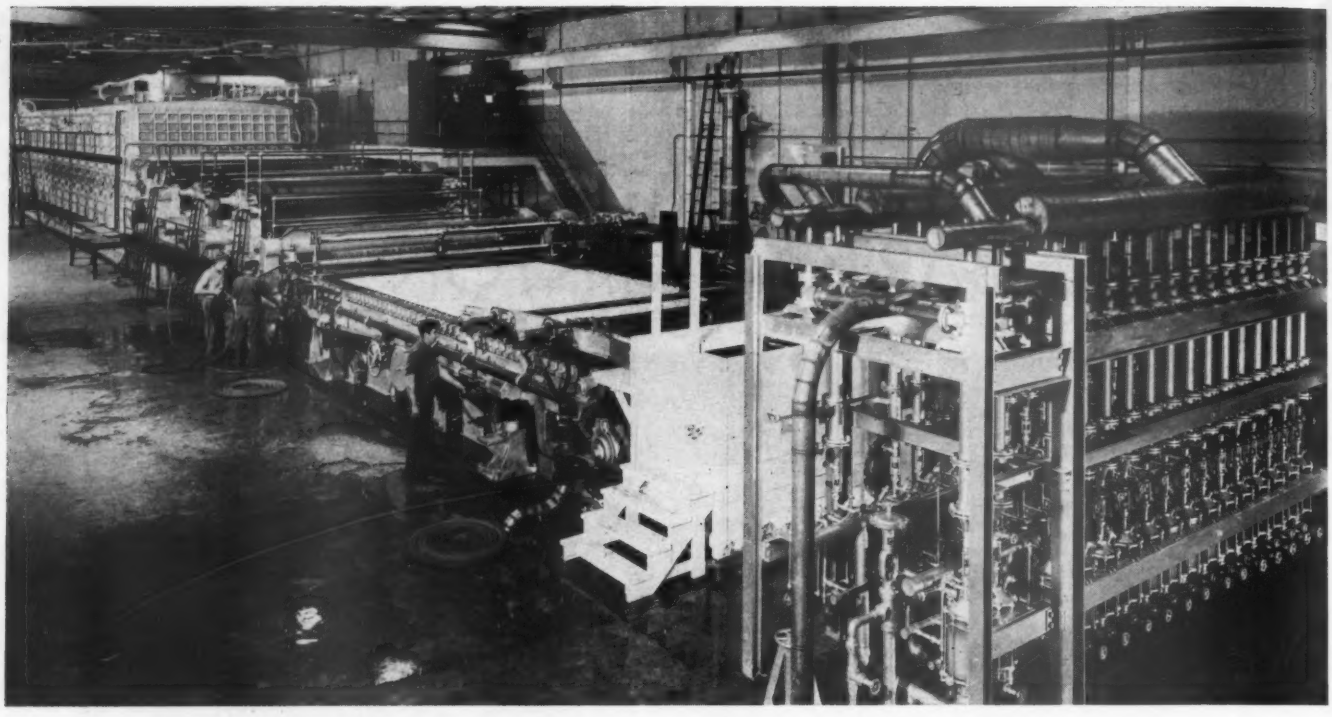
Congratulations to Weyerhaeuser Timber Company and sincere good wishes.

RICE-BARTON CORPORATION

WORCESTER, MASSACHUSETTS

Paper Machine Builders Since 1837

WEST COAST REPRESENTATIVE: RAY SMYTHE, 501 PARK BUILDING, PORTLAND 5, OREGON



NEW RICE BARTON PAPER MACHINE at Weyerhaeuser Longview plant. This machine—principal unit in the machine room—has removable type Fourdrinier and Minton dryer, producing a sheet 150-inches wide at 250 ft. per minute, and with a capacity of 200 tons a day. Wet end is near camera. Nichol vortraps are at right.

installed by Drew Engineering Co. of Portland, Ore. The design of this hood is unique in that removal or replacing of the washer cylinders may be accomplished without disturbing the hood proper or the exhaust units. The side panels may be unhooked from the hood thus allowing free access to the washing cylinders from the overhead trolley beams. Externally driven axial flow type fans, especially designed to withstand corrosive fumes, provide exhaust for carrying off vapors from the knotters as well as from the washers.

A ventilating and steam recovery system over the washers was supplied by Drew Engineering Company. A Foxboro instrument control system is used on the washers.

The pulp then goes to storage tanks and is pumped from there to Improved Paper Machinery Co. flat screens. There are eight lines of flat screens for this brown stock and also four lines for bleached stock. Each line consists of 4 sections of screen containing 14 plates each. Plates are Bronze chromium plated.

The pulp is then thickened over Valley Iron Works open type deckers.

In the batch system bleach plant in which James Brinkley Company of Seattle, cooperated in engineering and supplied equipment largely from Western Gear Works, six separate bleaching stages are used. In this manner the pulp at no time is subjected to conditions drastic enough to cause an appreciable loss in strength properties. Except for the caustic extraction stage, where tile-lined steel cells are used, all bleach cells and storage or dump chests are of tile-lined concrete construction. The tile linings were made and installed by Stebbins Engineering Corp. of Seattle. This mill and the MgO plant combined required 48 carloads of ceramic tile of all sizes and shapes—the biggest single assignment ever carried out by Stebbins.

Ventilation for the bleach plant was engineered and installed by Drew Engineering Co. Two large units located on platforms in the trusses clean and heat a large volume of ventilation air which is forced to the farthest corners of the room by a simple but effective distribution system.

Three separate exhaust systems prevent fumes from escaping into the room from the bleach cells of the various stages. All of the duct work on these systems consists of transite pipe and fittings suspended from the building structure. The exhausting units of each system are axial flow type fans especially designed by Drew Engineering Company to withstand the corrosive fumes. Driving motors are located outside the ducts. Bearings, shafts, and that part of the V-belt drives inside the duct are enclosed by ventilated casings. All interior metal parts, including the fan wheels, that are exposed to the corrosive vapors are covered with chlorine resistant rubber.

The chlorination and caustic cook stage washers are fitted with hoods and exhaust systems engineered and installed by Drew Engineering. These are smaller versions of the kraft washer hoods described above.

Fresh filtered air is supplied under pressure to the D. C. motors driving the washers of both the pulp mill and the bleach plant. Any stray chlorine fumes are thus kept from commutators and motor windings.

In the bleach plant is another ventilating system supplied by Drew Engineering Co. Western Gear Works of Seattle made 17 high density bleachers and five low density bleachers.

The stages of bleaching are:

1. Low density chlorination
2. Low density caustic neutralization
3. High density hypochlorite
4. High density caustic extraction
5. High density hypochlorite
6. High density hypochlorite.

Following each step, the pulp is washed over an 8 ft. by 12 ft. Oliver Ringvalve washer.

Following bleaching, the pulp is screened, as previously mentioned.

Bleached stock is pumped to storage tanks at the pulp drying machine. Vortraps, made by Nichols Engineering Co. are used to separate from the pulp going to the machine wire any dirt which may have been small enough to pass through flat screens.

The Rice Barton machine, with a Minton vacuum dryer, is of the same make and general construction as the machines which were chosen previously for Weyerhaeuser's sulfite mills.

The Minton dryer, consists of a housing for the 32 drying cylinders, operated at about 26 in. of mercury vacuum. Thus it is possible to dry the pulp without subjecting it to excessively high dryer surface temperatures which would cause some degradation of the pulp.

A Beloit Iron Works cutter is used to cut pulp into 30 by 30-inch sheets. These are automatically stacked by a lay-boy into approximately 400 lb. stacks, then moved by conveyor to scales.

The stack is pressed by a 600-ton hy-

FABRI-VALVES

(PATENTS PENDING)

ALL STAINLESS
OR CARBON STEEL
STAINLESS TRIM

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CORROSION
and
CHEMICAL
PROBLEMS

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PULP DIVISION

WEYERHAEUSER TIMBER CO.

LONGVIEW, WASHINGTON

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INDUSTRIAL PLANTS

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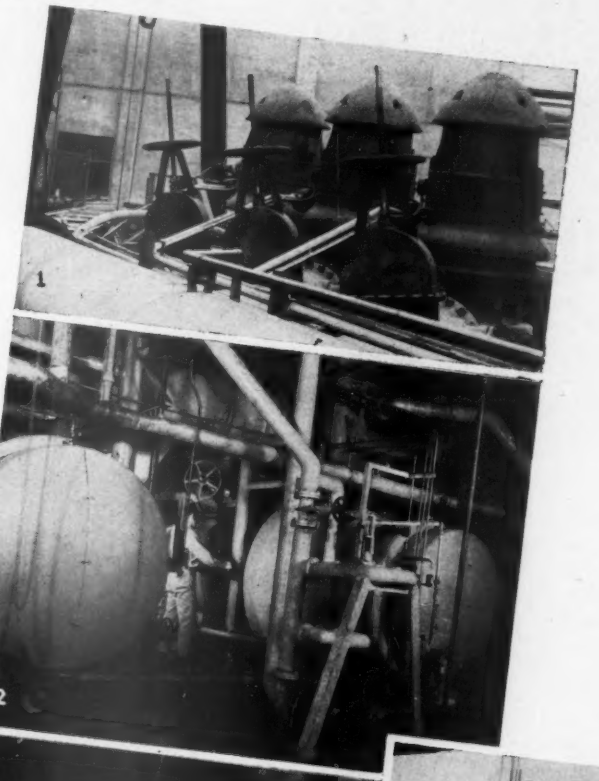
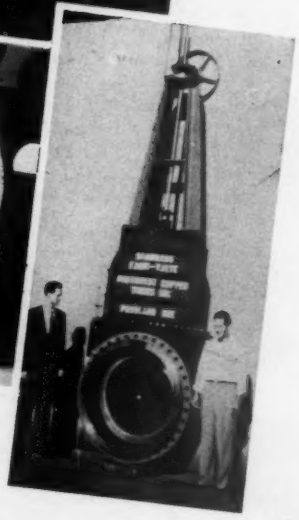
Fabricators of Stainless Steel Pipe, Fittings, Tanks, etc.





No. 1—Three 20-inch Fabri-Valves in Sewer Line.
No. 2—18-inch Fabri-Valve in MgO Recovery System Longview. See close-up of valve below.
No. 3—Close-up of 18-inch Fabri-Valve.
No. 4—One of four Massive 42-inch Fabri-Valve in large plant.

WRITE FOR NAMES OF USERS AND DETAILS

NORTHWEST COPPER WORKS, Inc.

2321 No. Randolph Street Portland 12, Oregon

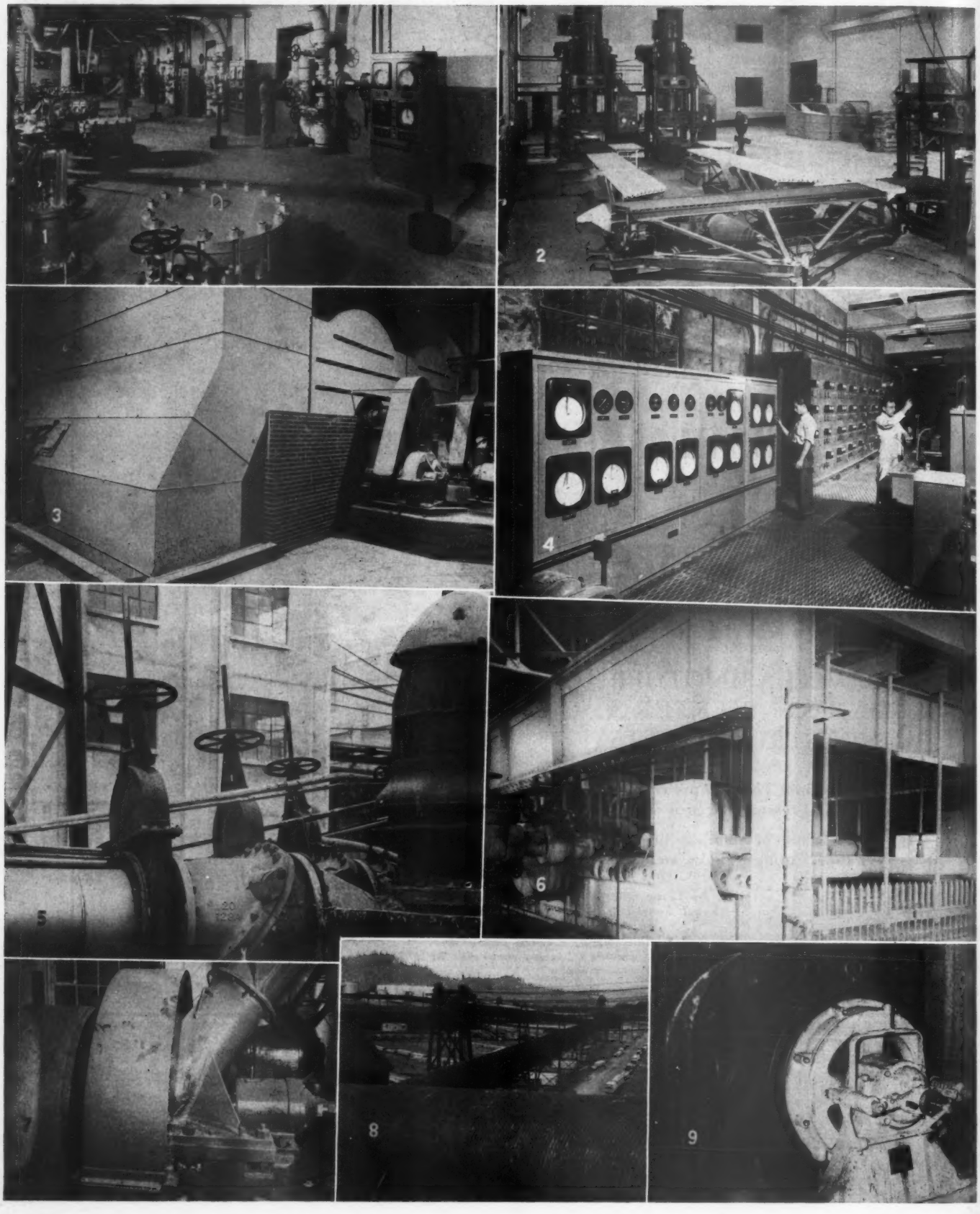
Phones: Webster 1404 - 2149 - 9956

draulic press. This equipment was supplied by Baldwin Locomotive Works (Eddystone Division), of Philadelphia. This bale is wrapped and tied with wire.

Finished bales are moved by belt conveyor to the bale stacker and scales in shipping warehouse. Power fork lift trucks are used for loading in cars or boat for shipment to the customers. Matthews conveyor system is used for bale handling and stacking.

Recovery and Chemicals

The following is a description of chemical recovery and chemical makeup



ON OPPOSITE PAGE ARE SHOWN features of new Weyerhaeuser kraft mill at Longview, Wash.

1—Operating floor and tops of five Combustion Engineering Co. kraft digesters.

2—Finishing end of Rice Barton Minton dryer. At end of pulp machine, is layboy (at right) interlocked with swinging transfer (center) for conveying pulp bales over scales to Baldwin-Southwark (Baldwin Locomotive Works) presses at left rear. Valley Iron Works broke beater is shown at far corner.

3—D. J. Murray cascade evaporators in kraft boiler house, driven by Westinghouse motors.

4—Foxboro instrumental panel for Dorr equipment in causticizing room. Electrical panel is by Westinghouse.

5—Sump end of sewer discharge lines from pulp mill, showing three 20-inch fabricated stainless steel type 316 Fabri-Valves supplied by Northwest Copper Works, Inc., of Portland, Ore.

6—Babcock & Wilcox recovery boiler as viewed on top floor of kraft boiler house, showing steam drum, main steam header for boiler, and suspension beams.

7—One of two Carthage chippers, each powered with 150 hp. Westinghouse motor, operating in conjunction with No. 1 sawmill and new kraft plant.

8—3500 ft. kraft chip conveyor with H. H. Robertson Co. corrugated protected metal covering. At three sawmills and plywood plant mill where "left-overs" are chipped, and conveyed to chip silos in distance.

9—Bauer Bros. refiner at kraft digester house for processing knots.

processes in this new kraft mill.

Black liquor recovered after the vacuum pulp washing stage, mentioned previously, consists of about 80% water and 20% solids. About 50-55% solids content is attained through a six-body, quintuple effect evaporator manufactured by General American Transportation Corp.

The thick liquor is then pumped to disc evaporators made by D. J. Murray Co., where a further concentration is accomplished by the recovery furnace hot flue gasses. Any loss of chemical is made up by adding salt cake, or sodium sulfate to the heavy liquor at this point. There is a Redler-type conveyor for salt cake supplied by Stephens-Adamson Company of Chicago.

The liquor is then sprayed into B and W Tomlinson furnace for recovery of the heat and chemical. There is sufficient heat value to generate about 10,000 lbs. of steam at 630 lb. p.s.i. pressure for each ton of pulp produced. The capacity production is 100,000 lbs. of steam per hour. Excess steam comes from the sawmills.

In the reducing atmosphere of the furnace the sodium organic compounds are reduced to sodium carbonate and the salt cake to sodium sulfide. This is dissolved to form green liquor.

A Cottrell electric precipitator is used to remove fly ash, operating at about 75,000 volts. This equipment was supplied by Western Precipitation Co. of Los Angeles.

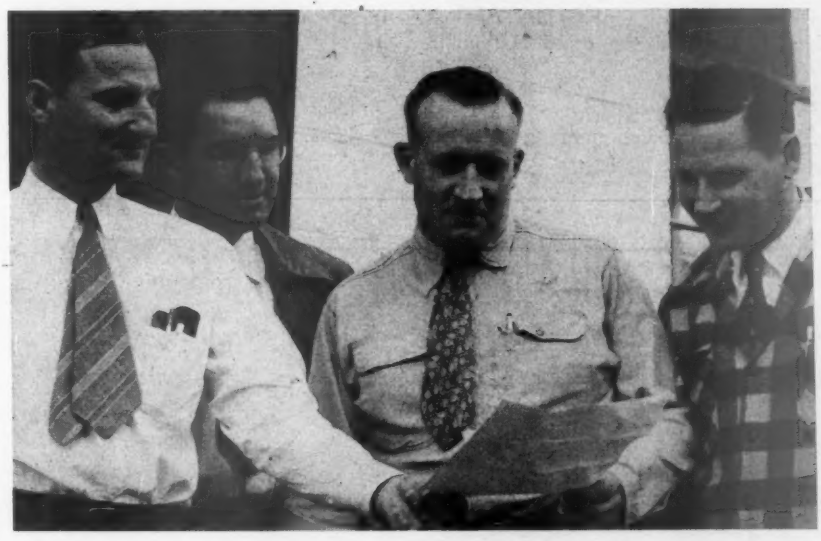
The green liquor, containing the recovered chemicals, is pumped to storage and then to a Dorr liquor making system, to convert the sodium carbonate to caustic soda, or sodium hydroxide to be used again for the cooking operation.

The green liquor is clarified by a standard continuous settling process. The lime mud, or calcium carbonate sludge is washed and thickened on an Oliver vacuum filter.

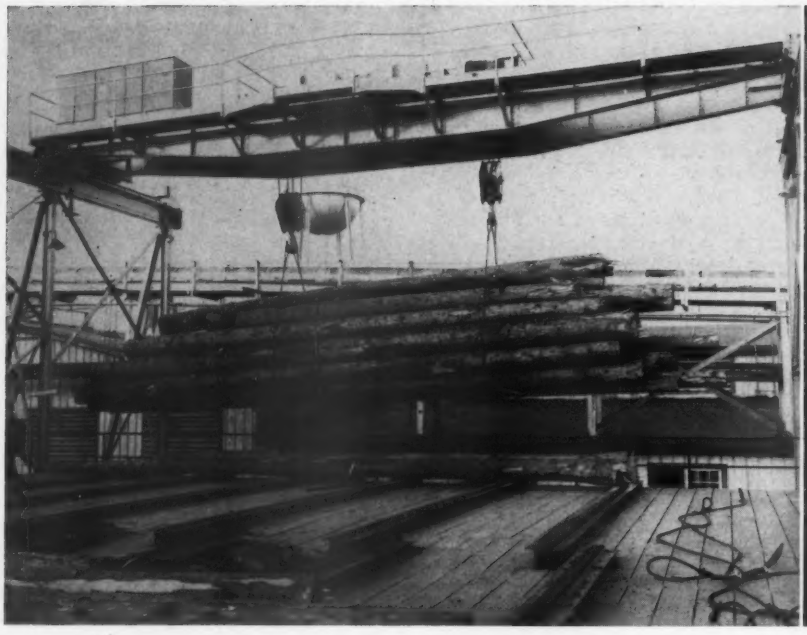
The sludge is burned in a rotary lime kiln to reform burnt lime for reuse in the causticizing process. The Traylor kiln is 250 ft. long by 7 ft. in diameter, brick lined and oil fired. Harbison kiln lining, installed by J. T. Thorp & Sons (San Francisco). Pebble limestone is added with the lime to make up any process losses. Reburned lime from the kiln is slacked in a Dorr continuous slacker. Gardner-Denver Co. furnished two air

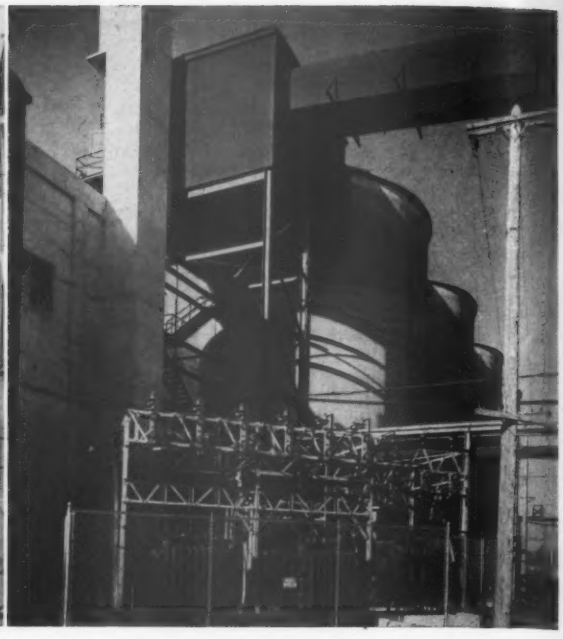
DONALD G. FELTHOUS (left), Plant Engineer at Longview, and HAROLD BIALKOWSKY (right), Research Director, were instrumental in success of new kraft mill installations by Weyerhaeuser.

KRAFT MILL FOREMEN (l. to r.)—CLAUDE CHRISTENSEN, GEORGE BEISSE, HUGH WICKETT and HUGO TRYGG.



RESPONSIBLE FOR SUCCESS OF OPERATIONS at Longview are (left to right): HOMER BEST, Machine Room Foreman; CARL FAHEY, Chief Electrician; ARTHUR ERICKSON, Chief Chemist; LYLE JONES, Chart Room Foreman, HERBERT PETERSON, Instrument Engineer; GEORGE WOLFE, Master Mechanic and C. V. McINTYRE, Pipe Foreman.





AT LEFT—A Colby Steel & Engineering Co. crane in action. This has 50-ton capacity and span of 56 ft. Hooks drop 30 ft. below crane girders. AT RIGHT—One of 10 Western Electrical Construction Co. transformer substation installations; kraft chip silos in background, and Robertson metal-covered chip conveyor at top right.

compressors in the new plant, one 300 cubic ft./min. and the other 500 cubic ft./min.

Pumps in Use

In summarizing pumping installed in the new kraft operation, Gerry Alcorn, superintendent, said the majority of processing pumps range in size from 15 to 9,000 g.p.m.

Nash vacuum pumps are used on suction couch rolls, suction boxes, 1st and 2nd suction press, washers, lime mud filter, and dryer drainage. Centrifugal pumps for various functions about the plant are Ingersoll-Rand, including a 7,000 g.p.m.

(Continued on page 71)

DECO

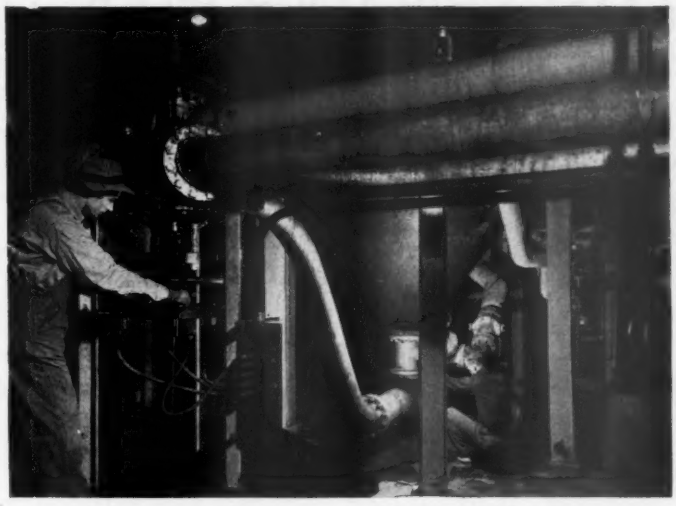
DECO at Weyerhaeuser New Kraft Mill
Longview, Washington

INSTALLATIONS:

Bleach cell exhaust systems
Chlorination and caustic cook washer hoods
Bleach plant ventilation
Screen room ventilation
Kraft washer hood
Machine room ventilation
D. C. Motor ventilation (for drying machine and pulp washers)

DREW ENGINEERING CO.
809 N. E. LOMBARD ST. PORTLAND, OREGON

One of the three DECO systems exhausting from the bleach cells. For additional information see the article describing Weyerhaeuser Timber Co.'s Bleached Kraft Mill in this issue.



Sandberg Central Blow Valve connecting 5 digesters to 1 blow line, shown at left.

FMP Circulating Pump and bottom of Heater, shown at right.

FMP EQUIPMENT IN WEYERHAEUSER MILL

5—Digester Circulating and Indirect Heating Systems

1—Blow Steam Heat Recovery Plant.

1—Relief Steam Condenser

1—Sandberg Central Blow Valve

FIBRE MAKING PROCESSES, INC.

Russ Building, San Francisco 4 — Tribune Tower, Chicago 11

Recovery Unit and Heavy Equipment

AT

WEYERHAEUSER TIMBER CO., LONGVIEW, WASH.

INSTALLED BY

C. C. MOORE & CO., ENGINEERS

CONTRACTORS FOR:

Steam and Recovery Plant Equipment for Pulp and Paper Industries
Steam Plant Equipment for Industrial Concerns

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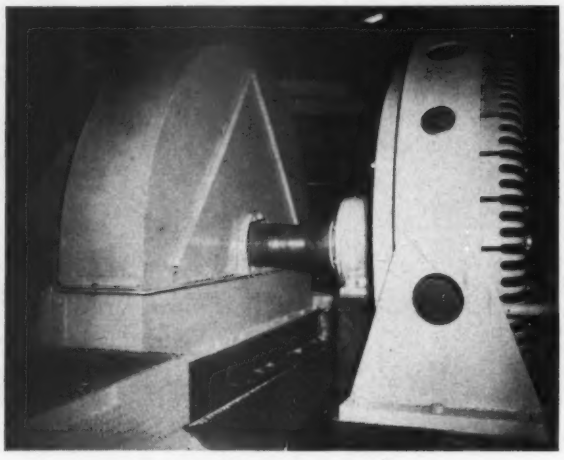
PORTLAND, OREGON
Failing Building
PHOENIX, ARIZONA—Luhrs Building
VANCOUVER, B. C.—Standard Bank Building

DON'T CHOP! CHIP YOUR WOOD IN



One of the six Carthage 10-knife chippers, Weyerhaeuser Timber Co., Pulp Division, Longview, Wn.

CARTHAGE

10 - KNIFE

CHIPPERS

Logs and small wood pieces are held to the center of the disc where knives are close together and a *continuous knife pressure* is applied, resulting in a smooth flow of *more uniform chips* that *pack better* in the digesters and give *higher yield* at lower maintenance cost.

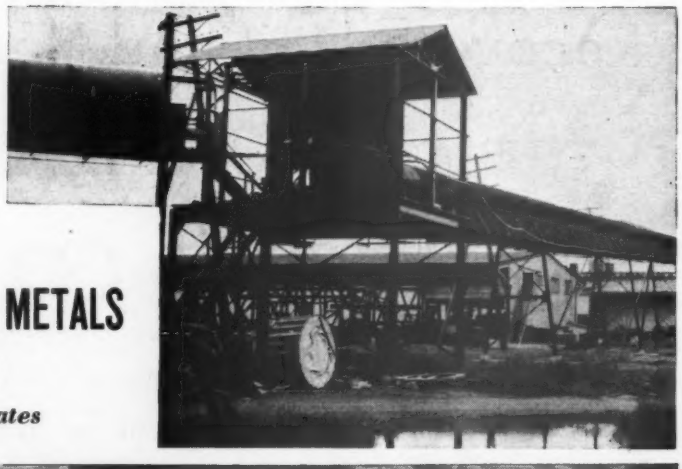
CARTHAGE MACHINE COMPANY

ENGINEERS and BUILDERS **CARTHAGE, NEW YORK**

Pacific Coast Representative: **RAY SMYTHE, 501 PARK BUILDING, PORTLAND 5, ORE.**

A Mile-Long Conveyor

Chip conveyor, sawmill to sulphate pulp plant, installed with Robertson Corrugated "Galbestos" covering, Weyerhaeuser, Longview, Wn.



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WEYERHAEUSER

(Continued from page 68)

unit in the filter plant; also Ingersoll-Rand barometric condensor operating in conjunction with Minton dryer.

There are many new conveniences in the layout of this mill. Interesting equipment for quick communication throughout the new plants are the Burgess Manning Co. (Libertyville, Ill.) "Acousti-Booth" telephone booths.

To make one ton of bleached sulfate pulp requires 100,000 gallons of water, 17,000 pounds of steam and two cords of wood.

Wood Supply and Preparation

Wood as a raw product arrives at the pulp plant in form of chips on either of two 30-in. rubber-covered conveyor belts transporting chips from the chippers to chip storage bins. At Weyerhaeuser's diversified Longview operations chipping facilities include seven chippers varying in size from 10-knife 47-in. machines to a 4-knife 175-in. unit. These chippers are strategically located to expedite utilization of wood from several sources—by-products from the company sawmills, peeler block cores from plywood plant, small logs salvaged from the woods operations by relogging or pre-logging, and from whole hydraulically-barked logs.

Two 10-knife 65-in. Carthage chippers operate in conjunction with No. 1 sawmill, converting slab-conveyor wood into chips from which to manufacture high-grade pulp. At sawmill No. 2 there are two more 10-knife Carthage chippers, 65-in. and 47-in. machines, and a 10-knife 47-in. Carthage chipper at sawmill No. 3.

Another Carthage chipper, 10-knife 90-in. unit, chips the wood coming through Allis-Chalmers Streambarker, including the small salvage logs and peeler-block cores from plywood plant. The salvage logs arrive at the small-log barker-chipper plant on rail cars.

A 50-ton Colby bridge crane of 56-ft. span transfers the logs from cars, a carload at a time, and transports them to the barker plant log deck where bundles are broken down, logs cut to suitable barker lengths, and then transported to the barker. The crane runway extends over railroad tracks and is planned to be extended over the river so that logs coming in either booms or by rail car can be readily handled. Peeler-block cores are similarly processed, except for cutting to length.

The largest chipper, a 4-knife 175-in. Filer & Stowell machine, is at the whole-log hydraulic barker which was designed by Weyerhaeuser Timber Co. and previously described in **PULP & PAPER**.

A third hydraulic barker, also a whole-log type, is at sawmill No. 1 where the bark and other foreign surface material is jetted from the log before arriving at the head saw.

Douglas fir chips, coming mainly from sawmill by-product chippers, goes to the kraft mill, as does a little hemlock from the sawmills. Then, too, considerable volume of chips for the sulfate mill is obtained from small salvage logs and peeler-block cores. The various chipping and barking facilities, of course, also prepare wood directed to the sulfite mill, as well as the kraft mill, depending on type of wood.

PORTLAND—VIA SUN VALLEY

A special Union Pacific streamlined train will take delegates and wives west to the big national technical association convention to be held in Portland, Ore., arriving in the convention city on Sunday afternoon, Sept. 11, after thrilling stop-overs at Sun Valley, Idaho, and Bonneville Dam on the Columbia River.

There have only been two previous industry conventions in the Far West but if the past record can be relied on, the train-trip will be an event remembered fondly by participants for years to come.

During the five days in the Portland area, the men will have a trip on a spectacular logging train route into virgin timber on Mount St. Helens and the ladies will be guests on a trip to Timberline Lodge and the ski lift on Mount Hood.

Convention inquiries should be addressed to TAPPI Convention Committee, Headquarters, Hotel Multnomah, Portland, Ore.

PREVIEWING COAST CONVENTION LITERATURE (L. to R.):
HAROLD C. WALL, Coast Chairman, and Chief Chemist, Longview Fibre Co.; R. T. BINGHAM, an official of the Technical Association; and R. J. LeROUX, Everett Mill Manager, Pulp Division, Weyerhaeuser Timber Co.
Harold Bialkowsky, Research Director, Pulp Div., Weyerhaeuser Timber Co., and a member of Technical Ass'n. excutive committee, was in charge of a booth at the Commodore during Paper Week—where all information was dispensed on this future meeting on the Pacific Coast.
Mr. LeRoux is co-chairman of the meeting, together with A. G. NATWICK, Asst. Resident Manager of Crown Zellerbach's Camas, Wash., mill.

Rayonier at Shelton To Have Hydraulic Barker

Award of contracts for construction of, and installation of, machinery for a new whole log hydraulic barking and chipping plant at the Shelton, Wash., mill of Rayonier Incorporated, is announced by Edward Bartsch, president of the company. The plant, which will greatly improve production efficiency and working conditions and will conserve wood resources, is to be in operation by mid-November, 1949.

Sumner Iron Works of Lowell, Wash., is building the new barker similar to the wheel-type or roll-type of barker introduced at Puget Sound Pulp & Timber Co,. Bellingham, Wash. and described in the Oct. 1947 issue of **PULP & PAPER**. The log is cradled on two sets of toothed wheels which rotate the log while 1100 to 1300 psi. water pressure through an adjustable nozzle, traveling lengthwise above the log, cuts away the bark. Sumner is also building the big chipper to handle whole logs up to 30 inches diameter.

Lathe-type hydraulic barkers and whole log chippers already have been installed and have been in operation for some time in the Port Angeles and Hoquim, Wash., Rayonier mills.

DONALD D. DAVIS, President of Minnesota and Ontario Paper Company, has announced declaration of a common stock divident of 50c per share payable April 20, 1949 to shareholders of record at the close of business on March 31, 1949.

(Continued from page 34)

which few take into account in their thinking of the stability and continuity of this business. For many years a number of companies depended largely on the importation of their supplies of all grades of pulp and much of their waste paper and rags from abroad.

"As you look over this situation for a period of 35 years, you will find that we have had interruptions in the free flow of shipments from abroad amounting to ten years' importations, or for about 30% of that time there has been difficulty in securing these supplies. With that situation in mind there has been built up in the North American continent a pulp producing capacity and a waste collection business sufficient to take care of the paper and paperboard productive capacity. Such a condition is a healthy one and deliveries now depend only on rail, water, and truck transportation within our own country, Canada and Mexico. Certainly we cannot improve on that situation in our long-range planning for continuity of operations.

"Fifth: Research and development in many fields have served to increase yields and extend our wood supply through utilization of certain species not in general use ten years ago. Innovations have become standard practice."

Mr. Everest then went on to read comments which he had invited from various sources on the future of the industry. It became apparent that in many outside quarters the faith in the industry was greater than within the industry itself!

It was generally felt throughout the convention that Mr. Everest's straightforward talk did much to get the thinking on an even keel and bring the new phase of the industry into proper perspective. Also, in many of his talks throughout the week, E. W. Tinker, executive secretary and treasurer of APPA, stressed the need for a proper evaluation of the industry on the part of industry men themselves.

The pulp manufacturers, too, were undergoing self-analysis at Paper Week, and over all their discussions was—at that time—the question mark of what the Scandinavian producers were going to do about second quarter prices. But, despite this question, pulp producers and consumers alike had arrived at a stable and

TWO OF PRINCIPAL SPEAKERS AT APPA were: D. CLARK EVEREST (left), President and General Manager, Marathon Corp., and COLA G. PARKER (right), President, Kimberly-Clark Corp. They analyzed present industry situation optimistically.

unjittery appraisal of the current situation which was published exclusively in the March **PULP & PAPER** under the title *"An Industry Discussion of the Pulp Situation—March 1949."*

Consumers Initiate Annual Event

A bright new fixture for Paper Week was initiated this year—the first annual luncheon of the Association of Pulp Consumers, arranged by Hugo Hanson, outgoing president, and Karl Clauson, secretary. Preceded by a reception in the Astor Gallery, this luncheon was more than merely a pulp consumers gathering. Brought together were leading U. S., Canadian, and foreign pulp producers, as well as government officials concerned with the industry, and representatives of various important selling agencies. Speakers were Mr. Hanson, who announced and introduced his successor, William Beckett, vice-president of The Beckett Paper Co.; R. M. Fowler of the Canadian association; James E. Ritchie, acting secretary of the U. S. Pulp Producers; Mr. Tinker of APPA; James Donaldson, Stora Kopparberg; John Westergaard, Castle and Overton; and H. E. Whitaker, a vice president of Mead Corp., and consultant for pulp and paper division of ECA.

Mr. Tinker spoke briefly on the proposed "Spence Bill" which he labeled "a reconstructed RFC" and, because of its very great dangers to all private enterprise, he recommended that all industry men familiarize themselves with it.

The representatives of Scandinavian countries indicated that emphasis of their mills would in the future be on quality pulps, rather than tonnage, and indicated that price would be shaped by the old theory of supply and demand. Mr. Westergaard pointed out that woodlands operations in Finland would by July be under the most favorable conditions since 1945, and that most of the pulp tonnage would be available for export to the westward.

Whitaker of Mead Talks on ECA

Mr. Whitaker, the featured speaker, had this to say about ECA:

"The Pulp and Paper Branch has approved the authorization of some $51,000,000 (out of the ECA total of $4,300,000,000 for European recovery) worth of materials. In addition, possibly 3 million dollars in all has been set aside for machinery. In all, this amounts to hardly more than 1% of the total European program, so we represent a relatively insignificant part of the show. But $51,000,000 is a lot of money just the same in anybody's language, and I know you are interested in what it was spent for, and why. To go back to general principles for a moment, you must understand that one of the really effective factors in this European aid has been the use of relatively small grants of funds in certain places to unlock frozen accounts, and to start the wheels turning in inter-European trade. The $51 million dollars was made up of the following items, in approximate percentages:

	Per Cent
Wood—for manufacture of pulp	2
Pulp fiber—for rayon textiles	23
Pulp fiber—for paper and board	50
Paper, including newsprint, container board, and many specialized technical grades	25
	100

"These grants were made for purchase of materials in the U. S. and Canada, and from European sources, but 90% came from North America. Out of the $51,000,000 about $31,000,000 went to the United Kingdom, and 10 million to Bizone, Germany. By coincidence, these proportions happen to be the same as the total of all ECA grants to these two countries. The

(Continued on page 75)

AMONG INDUSTRY LEADERS PRESENT AT PULP CONSUMERS LUNCHEON (Left to right): H. E. WHITAKER, Vice President of Mead Corp., and Chief of Pulp & Paper Section of ECA, was principal speaker. He revealed aid plans to industry abroad. ERNEST ERICSON, Pulp Sales Corp., Finnish Pulp Industries; JOHN WESTERGAARD, Castle and Overton; JAMES RITCHIE, Acting Manager of U. S. Pulp Producers; JAMES DONALDSON, Stora Kopparberg; E. W. TINKER, Secretary-Manager and Treasurer of APPA; and FRANK L. MITCHELL, Manager of CPPA.

HOW TREES ARE MAKING TIRES LAST LONGER

OTHER USES FOR WOOD CELLULOSE

Our research staff has developed a number of types of highly purified wood cellulose to give best results in the manufacture of the many end products made from it.

For making viscose rayon yarn for textiles, we supply a product with the brand name, "HICOLOR"

Acetate fibers and yarns are made from a Rayonier product branded "RAYACETA"

Cellophane is made from still another type of purified wood cellulose—"RAYAMO"

Many research accomplishments have, over a period of years, improved the wearing qualities of automobile and truck tires.

None, perhaps, is more important than the adoption of viscose rayon tire cord and fabric. Highly purified cellulose —derived by chemically processing wood — is a basic raw material for making these strong, tough cords.

When synthetic rubber tires for heavy duty were introduced, use of viscose tire cord was essential to withstand heat and fatigue. Today, these high-strength yarns are used to lengthen the life of both natural and synthetic rubber tires —for passenger cars as well as for trucks and buses.

Rayonier does not make tires or tire cord. We do make the highly purified wood cellulose used by the textile industry in producing viscose rayon cords and fabrics for the tire manufacturers. This cellulose — known by the brand name "RAYOCORD"—was developed by our research staff specifically for this purpose.

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SAINT LOUIS

ALBERT E. BACHMANN (left), Vice President and Mill Manager of Missisquoi Corp., new President of the Technical Association. He takes over responsibilities previously shouldered by WILBUR F. GILLESPIE (right), Technical Director, Gaylord Container Corp., Bogalusa, La.

Al Bachmann Elected President of Technical Group and Geohegan Became Vice President

Albert E. Bachmann, Missisquoi Corp., Sheldon Springs, Vermont, was elected president of the technical group. He succeeded W. F. Gillespie, of Gaylord Container, Bogalusa, La. Mr. Bachmann has been extremely active in technical association affairs, as well as in the superintendents meetings, particularly in the Northeastern region.

Elected to the vice presidency of the technical association was Kenneth P. Geohegan, of Dayton, O., vice president of Howard Paper Mills who became a member of the technical group's executive committee in 1947.

In closing his term of office, Mr. Gillespie urged greater investment in research by the association, pointing out that in the past ten years only $16,000 had been invested in some 15 projects. This, he said, was far from enough for the work of 70 committees.

A high point of the week was awarding of the Gold Medal for achievement to Hardy S. Ferguson, consulting engineer of New York (see pictures and sketch in our March issue) and the address by D. Clark Everest, past president of APPA and president of Marathon Corp.

Something new was added to the Paper Week scene when Harold Bialkowsky, Weyerhaeuser Timber Company, set up a booth to advertise the big Fall meeting to take place in September at Portland, Ore. He was kept busy passing out brochures and answering questions.

balance of $10,000,000 in ECA funds spent for pulp and paper goods, were distributed among seven countries. About $3,000,000 to France, less than $2,000,000 each to Italy, The Netherlands, Belgium and Ireland. A very small allotment in each case to Greece and to Iceland.

"I regret to say that I cannot as yet give you a clear picture of results. There are certain mills running today, due to this assistance, that were not running a year ago. There is more paper available for consumption in Europe, although the supply figure on a per capita basis is only a small fraction of the supply we enjoy here in the States. I can give you a few figures as production ratios, as now forecast for the current fiscal year, ending July 1, 1949, as compared with the previous year. In England, for example, total paper and board production is estimated to be up 9% from the 1947 average. In France, it is expected to be up 36%. In Holland, the increase over the previous production rate is expected to be 32%. In Belgium, 40%. In spite of these increases, the total for all 19 of the Marshall Plan countries will still be lower than the pre-war average—some 20% below pre-war. This is chiefly due to the depressed situation in Germany, where production has not yet reached the level of 50% of pre-war—due chiefly to lack of pulpwood and of pulp.

"As to the future," said Mr. Whitaker, "programs have been set up, by each country, for all items, export and import, and including pulp and paper, for this coming fiscal year, as well as the four-year period to 1952, when the recovery plan is to end. In general, we can say that for the pulp and paper part of the plan, the raw material assistance will continue in much the same general volume as during the past year, about the same kind of materials and to the same countries. In the case of pulp and paper *machinery* and *equipment*, the grants may run from two to four times the dollar volume; but the source of supplies will not necessarily be the U. S., as much of this machinery can and will be made in Europe. Year after next, if you wish to accept the premise that the total appropriation of American funds for European aid remains at current levels, you will probably see still greater proportions of the grants go into capital expenditures, for plant and equipment, much less to purchase raw materials from North America."

Salesmen Elect Helffrich

In the return to a buyer's market it was only natural that this Paper Week should witness more than usual interest in the 30th anniversary luncheon of the Salesmen's Association of the Paper Industry. This year Edward J. Edwards, Howard Paper Mills, turned the presidency over to Alan B. Helffrich, St. Regis Sales Corp., who has been acting as eastern vice president of this very active group. The principal speaker this year was Dr. William Edwards Stevenson, president of Oberlin College, who compared "the education industry" with the pulp and paper industry.

A high point in the program was the awarding of the President's Award to Ben K. Babbitt, Brown Co., for his long and varied service to the western division of the association. Names of guests at the "Mill Presidents' Table" read like a roster of top leaders in the pulp and paper industry from Maine to Florida, and New York to Puget Sound.

Cola Parker Is Optimistic

More than 700 this year attended the annual banquet of APPA where Louis Dolivet, international editor of United Nations World, spoke on "Industry's Stake in the United Nations" and Cola G. Parker, president of APPA and of Kimberly-Clark Corp., brought the president's message to the gathering. Said Mr. Parker, in part: "While we have much in this record for which to be grateful, we should be properly humble about it. We cannot rightly claim all the credit; for we must recognize that without the record production and the contribution to our national requirements of Canadian fiber and newsprint, the U. S. industry and the public requirements for 1948 could not have been met. We should, therefore, insist on giving grateful recognition to the Canadian industry.

"When we look at the record for 1948, the paper industry has a performance of which to be proud. Capacity figures, which I have mentioned, of course are interesting. But production is even more important for only from production comes payrolls, the wherewithal to purchase materials from others and profit—the return for risk-taking. So, we find 1948 production exceeded 22 million tons contrasted with 14½ million tons in 1940—more than a 50% increase. Per capita consumption has increased from 254 pounds in 1940 to 358 pounds in 1948. This is quite an item to consider in relation to the tremendous growth in population, between 1940 and 1948, approximating 15 million people, a growth which has not yet stopped.

"Paper *consumption* (and I am referring to use by the ultimate consumer and not just *orders* by intermediate handlers) is continuing at record levels. It took over two years of Herculean effort on the part of the industry to bring exhausted inventories up to a normal level. When that level was reached it was certainly possible to conclude that when pipe lines once more were full to overflowing the wise procedure might be to let the fullness subside a little. This seems to me perfectly natural particularly when we consider that it has been a very long time since there were inventories even remotely approximating what were formerly considered normal in relation to sales. But, be that as it may, so long as per capita consumption remains at 350 pounds or better, I can see no occasion to anticipate any great cataclysm. As I mentioned earlier, population continues to grow."

Mr. Parker sounded warning that the American people have given notice that they are going to make greater demands upon industry—much greater than was believed. He listed these demands as five in number:

1. Sufficient industry production to pay high and increasing real wages;
2. To make possible greater defense;
3. To provide totally unprecedented aid to the rest of the world;
4. To provide large and increasing public works;
5. To provide a constantly enlarging social welfare program.

"It is to be noted," said Mr. Parker, "that these are demands for production, not for dollars, which implies a recognition that such demands can only be met out of production. If this analysis is correct, it is a hopeful sign. But the public

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Try these extra-tough Simonds "Red Back" Knives in your own chipper mill. You'll find your production higher and better — your knife-costs lower — than you've ever known them before. See your dealer about this deal *today*.

SIMONDS ALSO MAKES:
"RED BACK" MACHINE KNIVES (For every woodworking job)
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SIMONDS CROSS-CUT SAWS ("Crescent-Ground" & General Purpose)

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SIMONDS

"Red Back" CHIPPER KNIVES

"When you use Simonds, you stay in the Highlands . . . of consistent cutting efficiency"

seems not to know, nor to have any interest in, whether industry has the facilities for such production and at the same time provide a reasonable real income for its owners.

"However," Mr. Parker said at a later point, "it is obvious that in the long run, to meet such demands, there must be fair returns to the owners of the business. It is of interest to note on that point that regardless of the attacks on profits the department of government most familiar with our business—(Department of Commerce—Ed.) has recognized our price structure as conservative."

Honor guests on the daises this year were Roy K. Ferguson, St. Regis Paper Co., who is expected to head APPA next year; Peter S. Paine, New York and Pennsylvania Co.; John L. Riegel, Riegel Paper Corp.; Reuben B. Robertson, Champion Paper and Fibre; Maxwell D. Bardeen, Lee Paper Co.; David L. Luke, Jr., West Virginia Pulp & Paper Co.; Sydney Ferguson, Mead Corp.; D. K. Brown, Neenah Paper Co.; John H. Hinman, International Paper Co.; R. A. McDonald, Crown Zellerbach Corp.; James L. Madden, Hollingsworth & Whitney; Donald S. Leslie, Hammermill Paper Co.; P. H. Glatfelter, P. H. Glatfelter Co.; Frederic Coburn Brown Co., R. L. Fitts, Southern Advance Bag and Paper Co.; D. C. Everest, Marathon Bag and Paper Co.; D. C. Everest, Marathon Corp.; Norman W. Wilson, Hammermill; Cranston Williams, American Newspaper Publishers Association; L. K. Larson, Weyerhaeuser Timber Co.; E. E. Grant, Crystal Tissue Co.; John D. Mylrea, NSRB, forest products division chief; George W. Sisson, Jr., Raquet River Paper Co.; Ralph G. Luff, National Paper Trade Association; L. D. Nicolson, District of Columbia Paper Mills; Oliver M. Porter, NSRB, pulp and paper section; Arch Crawford, Association of Magazine Publishers; Alan B. Helfrich, SAPI; A. W. Stompe, Marathon; R. A. Colgan, Jr., National Lumber Manufacturers Association; Gilford F. Henderson, Brown Co.; Paul A. Mahoney, International; W. F. Gillespie, retiring president of the technical group; Hugo H. Hanson, W. C. Hamilton & Sons; Ollie W. Messner, American Pulp and Paper Superintendents Association.

Film on Alaska

The long light of the midnight sun of Alaska was felt during Paper Week, for a film called "Tongass Timberlands" was given several showings in the Bulkley, Dunton Co. suite; and Frank Heinztleman, veteran Alaska regional forester, was in evidence at all the important sessions.

Management's Woods Meeting

The annual meeting of the American Forest Products Industries, Inc., of which Sydney Ferguson, chairman of the Mead board, is president, pointed to the growing recognition by timberland owners that trees are a profitable crop. Mr. Ferguson claimed that the program was meeting with "striking acceptance" by industry, government and individuals. Col. William B. Greeley, AFPI chairman, told the group that the educational program "More Trees for America" was "one of the most worthwhile projects ever undertaken by the forest industries." He stressed that three-fourths of America's private forest lands is in small holdings. Reports were made from Virginia, Alabama, New Hampshire and other states. Washington State begins its program this month; South Carolina embarks on it next summer. Vermont, Oregon, and Minnesota were said to be considering the project.

Stream Improvement Talks

Chief topics on the agenda of the Stream Improvement committee of APPA were general developments under the Barkley-Taft Act; the merits of H. R. 1343 to encourage prevention of stream pollution by allowing amounts paid for plants for the treatment of industrial waste as a deduction in computing net income; and a consideration of the position of other industries involved in the question of stream improvement and possibilities of obtaining joint action with them where mutual interests would be promoted. George E. Dyke, president of Robert Gair Co., Inc., was re-elected chairman of the board of governors. Others elected included two Vice Chairmen J. D. Zellerbach and Clyde B. Morgan, Treasurer J. D. Zink, and Russell L. Winget, re-elected executive secretary and assistant treasurer.

Commenting on the council's research activities Mr. Dyke said, "Certain phases of the council's research program are rapidly reaching a stage of relative completion. Studies concerning the volume and character of various wastes together with supplemental investigations regarding treatment and recovery are in an advanced stage of development. By its nature this is a task which is never truly the results have indicated a deficiency of completed since new wastes are continually produced by modified manufacturing methods, and basically novel treatment techniques appear from time to time, the applicability of which must be explored. From this point laboratory research has been concentrated on methods of waste handling which the exploratory studies revealed as most promising. An increasing number of the individual processes devised in the laboratory are now being carried past this stage and into the development phase. This work is carried out in demonstration units of large size. In some instances the development studies have been completed to the degree where the methods developed can be considered as nearly ready for full scale use; in others the method tried requiring a return to the laboratory for further improvement or the discovery of a process of greater promise. In all, eight demonstration plants have been in operation by the council in collaboration with member mills. Several of them have led to the installation of full scale treatment units and more will follow in the near future."

Clark Everest's Views On Value of Advertising

D. Clark Everest, president of Marathon Corp., expresses his views on advertising as follows:

"Too many people still consider advertising an 'expense.' It is the first item they cut out of their budgets when they think a tight situation is in the offing or they have their advertising budgets geared to percentage of sales. Such reasoning is fallacious. When sales volume decreases then precentage of sales dollar allotted to advertising should be increased to insure more sales volume. . . ."

GUESTS AT THE WALDORF AND COMMODORE (Left to Right): DR. E. C. LATHROP, Northern Regional Research Laboratory; PAUL EASTON, Bulkley, Dunton Co., N. Y.; LOUISE E. McGRATH, Booth Chemical Co.; JOSEPH J. THOMAS, Cumberland Mills, Maine; C. H. VICKERY, E. D. Jones & Sons Co.; FRANK HEINTZLEMAN, Alaska Regional Forester (who showed Alaska pulpwood movies); ROBERT ERICKSON, Graphic Arts Laboratory of Time-Life magazines, Kalamazoo; JOHN F. CAMPBELL, Flintkote Co.

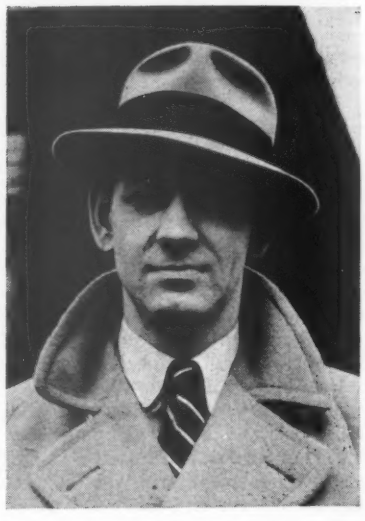
THIS IS ONE OF THREE ARTICLES IN THIS ISSUE BY RECOGNIZED AUTHORITIES WHICH INTERPRET THE SIGNIFICANCE OF THE TECHNICAL SESSIONS IN NEW YORK FOR READERS OF PULP & PAPER

THE PAPER SESSIONS
APPRAISING THEIR SIGNIFICANCE

By Rex Vincent

Technical Consultant

Bulkley, Dunton Organization, New York



REX VINCENT was born in Chillicothe, O., in heart of one of great pulp and paper areas of North America. He graduated from U. of Cincinnati, degree of Ch. E., with eyes on a career in this industry although at the University he had shown considerable journalistic bent, writing campus editorials which won national prominence. He jointed Container Corp. of America, as Chief Chemist, working variously at Carthage, Ind., Greenville, Miss., and Chicago. In 1937 he joined the Bulkley Dunton Organization in their Chicago offices, and transferred to New York in 1944 where he became Technical Consultant.

The 34th annual meeting of the industry's technical association in New York demonstrated that the organization is at a turning point in its growth. It has grown, like Topsy, over the last ten years particularly, and has sprouted 70 different committees and several sub-committees. Perhaps a time has arrived to execute a little judicial pruning before someone comes along and forms a committee to look after the committees.

The 1949 meeting seemed to demonstrate the state of confusion that is developing. For example, the session on Papermaking contained five papers; one of these dealt with a felt stretch wheel (which has been in mills for at least 20 years), another was about cementing leather belts, a third treated with suction roll noise and two wonderful papers told about a completely new treatment for pulp fibers. Felt measurement, roll noise, and leather belts are certainly subjects which could be appropriately presented at a different time and perhaps under a different session heading. While it is true that they are important subjects in the operation of a paper mill, they do not seem to be fitting for the main meeting of the scientific society of the paper industry.

High Interest in Curlator

In this session dealing with Papermaking were the two papers on the Curlator (see page 88) and when these two papers were read at the Canadian meeting in January and Dr. Boyd Campbell was asked to comment on them, he said that it was a rare privilege to be present when an entirely new idea in the field of stock treatment was presented for the first time and that the work done displayed how much there is to learn about cellulose and about pulp fibers. This curlating action has been going on for years in one way or another and if anyone was ever aware of it they were not able to analyze it and reproduce it, but the boys from Price Bros. analyzed it, reproduced it, measured it, photographed it, and measured the effects on paper made from curlated fibers. Further, they had enough faith to build a prototype machine and put it to work in one of their mills. The increase in usable fiber from a digester blow was about 10% and made it possible to use, in newsprint, nearly everything that came out of the digester. But it was impossible to escape the conclusion that their work has just gotten a good start. No practical work has yet been done to determine how much the character of a sheet of paper can be varied by using this machine as it seems to perform in some measure exactly the opposite of what is done by a beater in the normal preparation of stock. We can be sure that it will be used for more than just increasing the usable fiber from a digester, which alone is quite a gain.

Wet Strength Session

The session which presented the papers on the Curlator was crowded with men standing up around the room, and at the same time that these two important papers were going on there was greater congestion and discomfort at another simultaneous session that was probably the most interesting and informative that the technical association has ever had in New York. There were, at times, 45 men standing out in the hall trying to listen to the papers being presented and discussed by Borje Steenberg of the Swedish Forest Products Laboratory in Stockholm; Dr. Herman Mark of the Polytechnic Institute of Brooklyn and Wilfred Gallay, of E. B. Eddy & Co., Hull, Que.

This has never happened before and perhaps it displays the constantly rising scientific level of the members of the association that the association itself has not yet fully realized.

These three papers dealt with the fundamental forces holding fibers together in a sheet of paper, where they come from when their action is exerted, and the limits of their strengths. The men who gave them had complete control of their subjects and the members wanted to hear and to learn what these men have done and what they think. The fact that this session was so crowded was not due to other sessions being bores but rather to the increasing interest of the members in the basic, fundamental aspects of making paper. There is a deep, prodding demand for satisfactory theories of what goes on when a sheet of paper is formed and many irksome problems must wait on the formation of those theories before they can be solved. K. W. Britt of Scott Paper Co., Chester, Pa., is to be congratulated on this session which he chairmanned, and he must be sympathized with for having to conduct it in a room that was too small and filled with mirrors. It was also too bad that members who wanted to hear the papers on the Curlator had to miss this session.

Mr. Steenberg has brought to this country an entirely new concept for measuring the physical properties of paper and his stress-strain diagrams are something new to most members. These, Mr. Steenberg says, measure the physical characteristics of a sheet of paper as it is being used and in a later session he

PULP & PAPER asked three experts in their fields to write a review and critique of three phases of the technical meetings in New York. Their articles, which appear on these pages, reflect their own opinions and not necessarily the opinions of this magazine.

remarked that these were of much more value than pulling or testing a sheet of paper until it breaks. That point he describes as being the "death" of a sheet of paper, and we are all interested in the "life' of the paper.

Dr. Herman Mark is undoubtedly the best informed man on large molecules and polymers in the United States and the association is fortunate to have this man at their meetings. He pointed out in his own friendly manner that the bonding between fibers is of greatest importance whether it be textiles, felts, leather, or paper. He described several basic types of bonds; that of mechanical entanglements of rough surfaces, the attraction of polar groups, and hydrogen bonds which seem to be the strongest playing a part in this fiber to fiber bonding action.

Mr. Gallay dealt specifically with wood pulp fibers, pointing out the possibility of the existence before beating of very fine fibrils and the possible effect of varying degrees of swelling. Following the presentation of these papers there was an extremely interesting discussion among these three authorities.

And that brings up a suggestion—when we are so fortunate as to have a paper presenting an entirely new idea, such as the Curlator, or to have such men as Mr. Steenberg and Dr. Mark, why not give the entire group of attending members a chance to hear them at a general session? Pick out those papers that deserve prominence, isolate them from the highly specialized subjects and give them at a general session, which if necessary could run the whole first day. Then follow this with the specialty groups sessions. The program inaugurated recently of breaking the Fall meeting into various specialized meetings such as the Engineering Conference and the Fundamental Research Conference has enabled members to concentrate on these subjects instead of attending a general Fall meeting. These various conferences have given ample evidence of being successful and it is reasonable to assume that they will be continued and perhaps expanded. With this prospect in view perhaps some thought should be given to the idea of making the February meeting in New York, which is traditional, more general in nature.

Xerography and Xeroprinting

Another high point of this meeting, and proven so by the number in the audience, was the paper on Xerography and Xeroprinting presented by Dr. R. M. Schaffert, of Graphic Arts Research Div., Battelle Memorial Institute, Columbus, O. The process, which is almost unbelievable, was completely explained by a film and by actual demonstration. The papermakers should look with a great deal of favor on this new process in view of Dr. Schaffert's pregnant remark that although the workers had searched diligently they had not yet found a paper that they could not print on. The use of dry powders and electrostatic forces as a means of printing is so new that even though the demonstration was performed in full view and very ably explained, it still seemed incredible.

Curlator Was Result of Lab Accident

Arthur R. Ingle, president of Consolidated Machine Tool Co., Rochester, N. Y., which aided in development of the Curlator, says it has shown savings of $5.50 a ton of sulfite pulp (based on 1400 tons per day production), which means 75 cents to $1 savings on a ton of newsprint. It also has made possible 11% more sulfite pulp yield per cord of wood.

The process was accidentally discovered, said Mr. Ingle, when Dr. H. S. Hill and Dr. J. Edwards of Price Bros., Kenogami, Que., speeded up a routine lab experiment because they were in a hurry for a dinner engagement.

After cooking a batch of chips, they by-passed the hour-long washing planned and instead, washed the pulp under a faucet, squeezed it gently and put it in jars to keep moist. The next day they found the squeezing had changed the fibers and they set out to find mechanical means to duplicate the accident.

DR. HERMAN MARK, of Polytechnic Institute, Brooklyn, whose contribution to technical sessions received high praise from Mr. Vincent. Dr.. Mark discussed fundamental aspects of bonding in fibers and participated in session which Mr. Vincent described as one of the most interesting ever held in New York.

Equally interesting and as ably presented were the papers dealing with the requirements of paper for plastic lamination. These not only dealt with those characteristics which could be specified but also those vague, disturbing points that cannot be specified. Mr. Pitzer was the star of this program because of the forceful, interesting, and sometimes humorous manner in which he presented his subject. It was a task he obviously enjoyed and not a job he was in a hurry to get through. The arrangement of these papers was very ably handled and covered the subject thoroughly.

Mr. Anderson presented a very informative paper on the manner in which Western Electric specifies paper for use in phenolic laminates, and used a number of very good slides to illustrate his points on the various types of electrical equipment they have made from these laminated papers. Mr. Pitzer dealt with such things as slime spots, shives, wildness of formation and presented slides to show evactly what these faults do in decorative paper laminates.

But allow another suggestion here. These papers were given in the same unsatisfactory room as were the papers on bonding strengths and if this Hall of Mirrors must be used, turn out the little bare bulbs that are behind and to the right and left of the speaker. These little clusters of glaring lights are most annoying to anyone in the audience trying to follow the speaker and they seem to process a mild degree of hypnotic power after about two hours of looking at them.

Fundamental Research

The fundamental Research session was heavily attended but here again the mirrors stared you in the face and men learned this way and that to hear and see the speaker. The paper by Francis T. Ratliff, of Johns-Manville Research Laboratory, on hemicelluloses in bleached kraft was well done and it started a lively discussion which Chairman Lewis felt duty bound to stop because three more papers were scheduled to follow.

Mr. Ratliff offered a very interesting idea, namely, that the function of the hemicelluloses is to enable a high specific surface and bonding areas to be developed during beating without much decrease in fiber strength. He found, as other investigators have found, that there is some correlation between the hemicellulose content and the physical properties of pulp. Perhaps these hemicelluloses act with some kind of catalytic action in speeding up the water-cellulose reaction. More of this idea was developed in the discussion and these discussions should not be choked off, they should be allowed to run until there is no evidence of anyone desiring to speak his mind on the subject. After all, the men listening to the paper can read it later, but they cannot read or participate in the discussion that the paper created.

Many times members have said that the discussion following the paper is the main reason for going to hear the paper presented. There are still differences of opinion and the fellows enjoy seeing these differences brought out in the open where they can hear both sides right off the cuff. Most of the committee chairmen have sufficient experience to detect a paper that will start off a lively discussion and this should be used to advantage when scheduling a particular session.

The technical associtions is almost grown up and the training of its members is approaching the level of a scientific society. Interest in sales talks is decreasing and interest in real fundamental research is increasing. This should be recognized and used to raise the standards of all papers presented to its members. My review has been a somewhat critical one, however it does deal with things that the association executives are aware of and will undoubtedly be working to correct. It must be emphasized that this review of the paper sessions is restricted to the 34th Annual Meeting and is not a criticism of the technical association in general. This writer has nothing but admiration for the great over-all work of the group.

Dammann Joins Bumstead-Woolford

Bumstead-Woolford announce that Arthur Dammann has joined their organization in capacity of sales engineer specializing in instrument and control equipment manufactured by The Foxboro Company and The Hays Corp. Mr. Dammann is well known in this industry in the Pacific Northwest having devoted the past five years to instrument problems in the area after previous experience in the east.

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SILVERLINK ROLLER CHAIN

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"SS" CLASS STEEL ROLLER CHAIN

Used for medium and heavy duty drives operating at speeds up to 700 feet per minute. Made in various sizes with offset or straight sidebars, with or without bushings or rollers, for a wide range of applications with ultimate strengths up to 375,000 lbs.

"H" CLASS PINTLE CHAIN

An excellent, inexpensive chain for conveyors that slide. Links are straight on top and bottom for full-length sliding contact, and broad, flat wearing shoes provide extra sliding surface while shielding the ends of pins or rivets. Available in a variety of plain chains and attachments.

"ROOF TOP" TRANSFER CHAIN

Excellent for extra-heavy duty conveying, for lumber and logs. Usually two or more strands operate in parallel channels with only the tops of the links projecting, so that material may be loaded upon a conveyor, or removed transversely. Bottoms of links present a continuous straight sliding surface.

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Chain..by LINK-BELT

THE PULP SESSIONS
APPRAISING THEIR SIGNIFICANCE

By George H. McGregor

Veteran Chairman of Technical Association's Acid Pulping Committee with 23 Years' Experience in Various Fields of Pulping.

Pulping

As evidenced by the number and diversity of papers presented at the industry's technical convention in New York, Feb. 21-24, there appears to be many interesting and informative subjects to investigate, relating to the field of sulfite, kraft, mechanical, semi-chemical, and straw pulping, as well as investigations relating to by-products from one or more of these processes.

The pulping conferences were highlighted by the presentation of two papers from Canada. The subject matter of these papers, the result of a number of years of intensive research and development, should obviously stimulate thought and action pertaining to a phase of pulping of interest to a broad cross section of the field of pulping.

The first of these papers, "Curlated Pulp—A New Approach to Pulp Processing," by H. S. Hill, J. Edwards, and L. R. Beath, Price Bros. & Co., Ltd., Quebec, P. Q., indicates how "a fairly dilute pulp suspension is dewatered while the pulp tends to form nodules at high consistency."

"These nodules roll in changing directions between two surfaces which compress them as they roll," they wrote. "This rolling and compression tends to alter the fiber shape so as to exhibit more bends, kinks, and twists, and a more tubular cross section. This manipulation exerts a powerful deshiving action."

It is this latter action which is probably of greatest interest to the field of pulp and paper making, and one which should logically receive great attention in the near future.

For a good many years, the greatest tonnage of sulfite and kraft pulp has been made by rather standardized procedures to give a yield of unbleached pulp from wood, of approximately 45-48%. It should be quite logical for the industry to attempt to utilize the 10-15% hemi-cellulose portion of the wood, and obtain greater yields. It is recognized of course, that having such substances in pulp may alter further normal processing techniques, to still obtain papers of desirable characteristics. Thus the problem is one of close cooperation between the pulp manufacturers and the papermakers. Since wood cost is approximately 50% of the cost of pulp manufacture, it is obvious that any reduction in wood consumption should readily be reflected in lower pulp production costs. It is likewise apparent that

GEORGE M. McGREGOR, a mill executive in both Middle West and Far West—in both operations and research—has written this appraisal of Pulping Sessions and Pulp By-Products Sessions at the New York convention. PULP & PAPER invited Mr. McGregor to review important papers on sulfite, kraft, groundwood, straw and semi-chemical pulping and by-products because of his broad experience over 23 years in the pulp industry. Now resident of International Falls, Minn., he is a specialist in Minnesota & Ontario Paper Co.'s modern Research Division. M & O makes sulfite, kraft and groundwood pulps. Mr. McGregor formerly was a Mill Superintendent for Weyerhaeuser Timber Co. and for years has headed the Technical Association's Acid Pulping Committee.

certain species of acceptable pulp wood are decreasing at a rate that can not be ignored. The wider use of existing species constitutes good basic raw materials utilization.

The production of a so-called semi-chemical pulp is not new. Neither is the production of a semi-chemical pulp limited to any one of the usual chemical pulping processes. The U. S. Forest Products Laboratory, at Madison, Wis., has done considerable work on semi-chemical pulping particularly by the use of sodium sulfite buffered with sodium bicarbonate. The results of this work is readily available to anyone who is interested enough to obtain their regular published pamphlets. It would seem logical to expand this work to semi-chemical pulping of various species by the various chemical pulping processes.

Wood pulp constitutes by far our greatest present source of papermaking fibrous materials. This is indicated by the U. S. Pulp Producers Association figures of fibrous materials consumed by U. S. mills in 1947, which are as follows:

	Tons
Wood Pulp	13,872,000
Other Fibrous Materials	9,323,637
Waste Paper	7,844,968
Straw	523,466
Rags	453,102
Flex	66,386
Manila Stock	10,071
Miscellaneous Fiber	425,644

It would seem quite logical, then, to make a considerable tonnage of our papers from chemical pulps of 55-60-65 and even 70% yield. This means a re-appraisal of our pulping techniques, particularly to develop uniform products, it being well recognized that uniform pulp quality is paramount for the smooth operation of paper machines to make acceptable products. Whether wood is cooked normally or by a semi-chemical process, it should be cooked uniformly. Like the classic housewives' potatoes, the outside should not be completely digested to soften the center.

The second paper of this series "The Curlator—Its Application to High Yield Newsprint Sulfite," by Frank P. Silver, Price Bros. & Co., Ltd., Riverbend, P.Q., very completely described this new type of pulp processing equipment and a definite application to newsprint sulfite. Indications are that a very acceptable product has been obtained on commercial operation, at low power consumption. It is recommended that this paper, along with that on Curlated pulp, be seriously considered by wood pulp manufacturers and consumers (Curlator papers briefed, page 88).

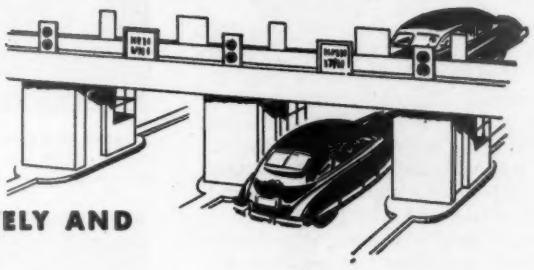
In conjunction with the subject of semi-chemical pulping, J. N. McGovern, K. J. Brown, and W. A. Krashe of the U. S. Forest Products Laboratory, Madison, Wis., presented a paper on "Experiments on Steam and Water Cooking of Aspen." Tables were presented indicating yield of pulp at various cooking temperatures.

"This product has been used successfully for corrugating board," it was pointed out. "Pulp produced in yields of 81 and 84% by water and steam cooking, respectively, were made into corrugating boards that had strength properties equaling or approaching those of commercial hardboard semi-chemical corrugating board, and that corrugated satisfactorily."

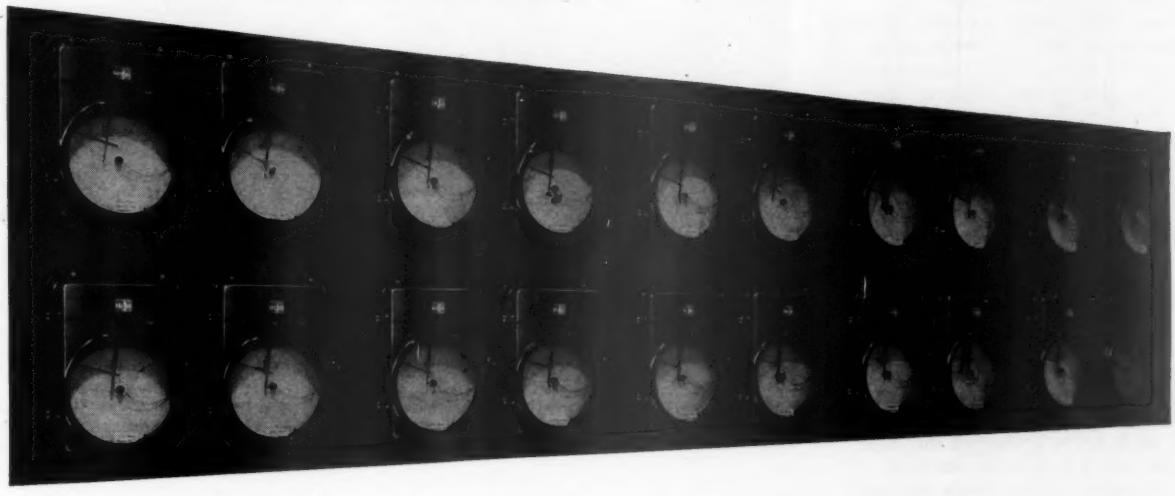
In another paper, "Effect of Buffering

THIS IS ONE OF THREE ARTICLES IN THIS ISSUE BY RECOGNIZED AUTHORITIES WHICH INTERPRET THE SIGNIFICANCE OF THE TECHNICAL SESSIONS IN NEW YORK FOR READERS OF PULP & PAPER

This Panel Operates Like a Toll Station



TO REGULATE FLUID "TRAFFIC" ACCURATELY AND APPORTION COSTS EQUITABLY



19 Bristol Electric Flowmeters in this turbine room tell at a glance and give accurate records of the flow of steam supplied to 5000 kw turbine, by-pass steam, turbine exhaust, feed water, steam to deaerating heater, to chemical plant, to machine room, to bleach plant, to digester, to acid plant, to 2500 kw extraction turbine, condensate from machine room, and return water from digester.

With Bristol Recording Flowmeters and Automatic Flow Controllers, you can be sure the flow of steam and other fluids to the various processes in your plant is accurately controlled . . . and you can accurately charge each department for the amounts it uses.

In many pulp and paper mills, Bristol Flowmeters are used in controlling "balance" in such processes as brown stock washing, evaporators and digesters . . . and also as integrating and totalizing instruments to measure amounts of steam and chemicals used in order to pro-rate expenses and check up on waste.

Bristol Flowmeters—both mechanical and electric—are featured by forged steel meter body; accurately-machined float chamber; large, powerful float; interchangeable high pressure tube; pressure-tight, stainless steel bearing. Available with accurate integrators.

Write for Bulletin F1600 on Bristol Electric and Mechanical Mercury Manometer Type Flowmeters for recording, integrating and controlling. THE BRISTOL COMPANY, 142 Bristol Road, Waterbury 91 Conn. (The Bristol Co. of Canada, Ltd., Toronto, Ont. Bristol's Instrument Co., Ltd., Lynch Lane, Weymouth, Dorset, England.)

60 YEARS...1889-1949

BRISTOL

Engineers Process Control for Better Products and Profits

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

Agents in Sodium Sulfite Semi-Chemical Pulping," J. N. McGovern and E. L. Keller of the U. S. Forest Products Laboratory show that:

"(1) Cooking time decreased with increased alkalinity in cooking; the reduction was approximately one-half in increasing the spent liquor pH values from 7.2 to 8.9.

"(2) Pulp strength was little affected by the kind or degree of buffer except that the tendency was toward slightly higher tearing strengths when sodium hydroxide and sodium sulfide were used.

"(3) The brightest pulps were obtained with no added buffer or with small amounts of buffering agent giving spent liquor pH values of 7.2 to 7.4. A considerable darker pulp was obtained in digestion buffered to a final pH value of 8.9 with sodium sulfide.

"(4) When fairly large amounts of sodium bicarbonate were used, a slightly higher pulp brightness was obtained by not relieving the excess digester pressure."

It is recognized that cooking semi-chemical pulp with unbuffered sodium sulfite results in a slightly acid waste liquor which means the use of acid resisting equipment for cooking and further refining.

The production of sulfite pulp by means of magnesium, ammonium and sodium base acid has been, and will be receiving considerable attention for some years. Such a radical change in cooking base is a logical development from a number of standpoints, recovery of cooking chemicals, and heat, utilization of other than normal species in a given area, is a possible solution to the waste disposal problem. The changing of base necessitates formulation of basic chemical data, particularly for efficient operation of acid plants. As a contribution to these data Dr. F. H. Conrad of Missouri School of Mines, and D. B. Brice, Kansas State College, presented a paper entitled "The Solubility of Sulfur Dioxide in Magnesium Bisulfite Solutions." Such papers should be carefully analyzed by chemical control departments of sulfite pulp mills.

In the field of kraft pulping, another basic data paper was presented by George E. Martin, Mosinee Paper Mills, Mosinee, Wis., entitled "The Hydrolysis of Sodium Sulfide in Mixtures of Sodium Hydroxide." The work indicated "that the sodium sulfide was about 40% hydrolyzed at the beginning of a typical kraft cook and about 90% hydrolyzed at the end. This correlates well with the idea that sulfur activity and completely aids pulping reaction by entering the lignin from the sodium hydrosulfide to form an alkali-soluble thiolignin."

In the field of the fundamental research division an interesting paper was presented by Francis T. Ratliff, of Johns-Manville, Manville, N. J., entitled "Correlation Between the Hemi-Cellulose and Physical Properties of Bleached Kraft Pulps." Tying in with the interest in high yield wood pulps such data should be of considerable interest to the papermaker as well as the pulp manufacturer.

"Kraft pulps of 43-66.4% yield were bleached with acidified sodium chlorite," it reported. "Physical evaluation and chemical analysis of the bleached pulps showed that, in general, strength properties increased continuously with yield and also with the hemi-cellulose content. Handsheets indicated that the area in optical contact was closely related to other pulp properties. Thus, the area of optical contact appears to be a reasonably direct function of the actual bonded area, and the latter, especially in early beating stages, is correlated with the bursting and tensile strengths of the sheet. Apparently the hemi-celluloses manifest their effects upon pulp properties by enabling a high specific surface and bonded area to be developed during beating without much decrease in fiber strength."

In the field of de-inking, an interest-

A TABLE OF EX-PRESIDENTS of the Industry's Technical Ass'n. (Left to right): VANCE P. EDWARDES, International Paper; ALLEN ABRAMS, Marathon Corp.; R. S. HATCH, ex-Weyerhaeuser Timber Co.; RALPH A. HAYWARD, Kalamazoo Vegetable Parchment Co.; G. W. E. NICHOLSON, Union Bag & Paper Co.

FOREST INDUSTRIES COUNCIL starting from arrow clockwise around table: HOWARD MENDENHALL, Brandywine Valley Ass'n., West Chester, Pa.; CLYDE S. MARTIN, Chief Forester, Weyerhaeuser Timber Co., Tacoma, Wash.; STUART MOIR, Forest Counsel, Western Forestry & Conservation Ass'n., Portland, Ore.; HAROLD S. CROSBY, Northern Hemlock & Hardwood Mfgrs. Ass'n., Oshkosh, Wis.; LUTHER O. GRIFFITH, Griffith Lumber Co., Huntington, West Va.; JOHN L. KEMMERER, Jr., Wise Coal & Coke Co., Dorchester, Va.; H. GANDY, Jr., National Coal Ass'n., Washington, D. C.; WILLIAM D. HARRIGAN, Scotch Lumber Co., Fulton, Ala.; JOHN B. MacAFEE, Secretary, Forest Industries Council; KATHERINE G. McCOY, Forest Industries Information Committee; JAMES L. RITCHIE, U. S. Pulp Producers Ass'n.; GEORGE BOYD, Jr., and JOSEPH F. SHARP, Wise, Corlett & Canfield, N. Y. C.; E. W. TINKER, Executive Secretary, American Paper & Pulp Ass'n.; R. W. LYONS, Kimberly-Clark Corp., Neenah, Wis.; GEORGE B. AMIDON, Minnesota & Ontario Paper Co., Minneapolis; STUART B. COPELAND, President, The Northwest Paper Co., Cloquet, Minn.; FRED MORRELL, American Paper & Pulp Ass'n., Washington, D. C.

Abstract of This Review of Pulping and By-Products Papers

A review of papers relating to pulping and by-products presented at the industry's annual technical association convention in New York, Feb. 21-24, indicate trends of prime interest to the industry.

The field of pulping appears to be undergoing a very significant transition involving changes in pulping chemicals, pulping techniques, and pulping species. The present economic situation permits and warrants a re-appraisal of especially the chemical pulping processes. In the field of sulfite pulping consideration of other than normal cooking acid base is significant. We will hear more of magnesium, ammonium, and sodium base pulping, to permit recovery of chemicals, recovery of heat, utilization of other than normal species in a given area, and as a possible solution to the waste disposal problem.

In both the field of sulfite and kraft pulping, as well as semi-chemical pulping, research and development activities can well be pointed toward the production of high yield pulps, especially since pulpwood costs constitute approximately 50% of pulp production. It should be possible to adapt high yield pulps to a major percentage of our paper and paperboard products. The use of such high yield pulps must necessarily require the closest cooperation and sympathy of the pulp manufacturer, papermaker, research and development, and control departments.

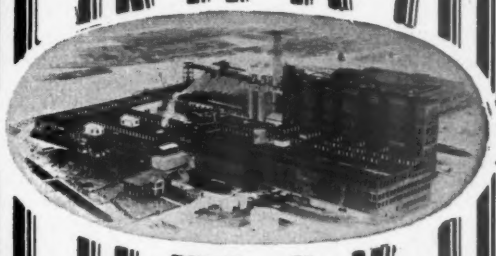
The present and probably continuing cost of normal fuels, warrant due consideration to recovery of heat from pulping waste liquors.

By-products of chemical pulping processes have been the source of considerable effort and discussion. Numerous reviews of existing products have been presented. Greater interest would attend the presentation of papers relating to production problems of by-product manufacture, their properties, uses and use requirements.

Straws represent a material source of fibrous raw material for paperboard and some papers. The Northern Regional Laboratory at Peoria, Ill., has contributed considerable information relating to straw pulping and its conversion.

Considerable research relating to pulping processes and techniques is presently being undertaken in a number of our universities and colleges, as well as the regular government agencies. It might be feasible to formulate a central discussional group or committee of TAPPI to freely discuss projected programs, primarily to gain wider information, exchange ideas, and minimize unnecessary duplication of effort.

SOUNDVIEW



High Grade

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SULPHITE PULP

SOUNDVIEW PULP COMPANY
EVERETT WASHINGTON

ALSO AT PAPER WEEK (L. to R.): J. G. STRIEBY, Kimberly-Clark Corp.; DR. L. C. JENNESS, U. of Maine; HAROLD BUGBEE, Boston advertising executive (who has attended Paper Week for past 15 years to keep in touch with the industry). R. W. BRITT, Scott Paper Co.; B. NIBERGER, Castle & Overton; JAMES HARRISON, Michigan Carton Co., IRVING PETERS, F. C. Huyck & Sons; C. M. KOOM, Munising Paper Co.

ing paper was presented by H. P. Baily, J. J. Forsythe, and J. F. Tomaszcuski, of International Paper Co., Niagara Falls, N. Y., entitled "De-inking Studies - Survey of a Production System of Screen Analysis." This paper evidences further interest in the conservation and wider use of fibrous materials.

"Work conducted on a semi-chemical scale has shown that it is possible to take partially de-inked and defibered stock from a centrifugal pulper and by selective screening with Jonsson (Bird Machine Co.) screens to separate out the de-inked and defibered fractions which can then be run directly to brown stock washers, thereby eliminating the normal cooking procedure or making it necessary on a relatively small part of the total stock," they asserted.

Such procedure should definitely give greater yield of fiber from waste papers.

The subject of straw pulping, to utilize an abundant fibrous raw material for paper and board, has received considerable attention at the Northern Regional Research Laboratory, Peoria, Ill. Dr. S. I. Aronovsky has presented a paper relating to "A New Mechano-Chemical Process for Pulping Agricultural Residues." According to this work, "excellent strawboard pulps were produced by cooking wheat straw in a laboratory pulper at atmospheric pressure, and at temperatures at or near 100° C., using the normal amounts of chemicals. Strong, easy bleaching kraft straw pulps were made in one-half hour cooking period in this equipment."

Such a procedure should be of considerable interest to the straw board industry.

Bleaching

A somewhat fundamental study was carried out by Gary W. Jones, of Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis., on "The Effect of Sodium Peroxide Bleaching on the Components of Spruce Groundwood." Such information is of considerable interest and value to this commercially successful procedure for bleaching groundwood.

"As evaluated in terms of current wood analysis procedure, sodium peroxide bleaching does not cause any large scale chemical changes in the known components of spruce groundwood," he said. "Data suggested that the major bleaching effect exerted by sodium peroxide upon spruce groundwood can probably be attributed to its reaction with the lignin. It was deduced that sodium peroxide attacks lignin primarily through a portion of the carbonyl groups in the lignin structure. Kinetic and analytical studies of the reaction between sodium peroxide and isolated native lignin indicated that lignin is composed of two or more fractions which are essentially the same in elementary composition and methoxyl content but which differs from each other with respect to their intrinsic color and chemical reactivity toward sodium peroxide. It was suggested that the bleaching action of sodium peroxide upon spruce groundwood may be the result of a chemical reaction between this reagent and the more highly colored lignin fractions, the efficiency of the bleaching action may be attributable to a high specificity on the part of sodium peroxide toward these particular fractions."

A review of pulping by-products was given by R. S. Aries and Arthur Pollack (former director of development for West Virginia Pulp & Paper Co., and now a consultant) in a paper relating to "Commercial Lignins." Mention was made of regular products marketed today.

In this respect it would be of considerable interest if TAPPI could present papers of greater detail relating to pulping by-product production, properties, uses and use requirements, with also some indications of potential tonnage outlets for the various uses.

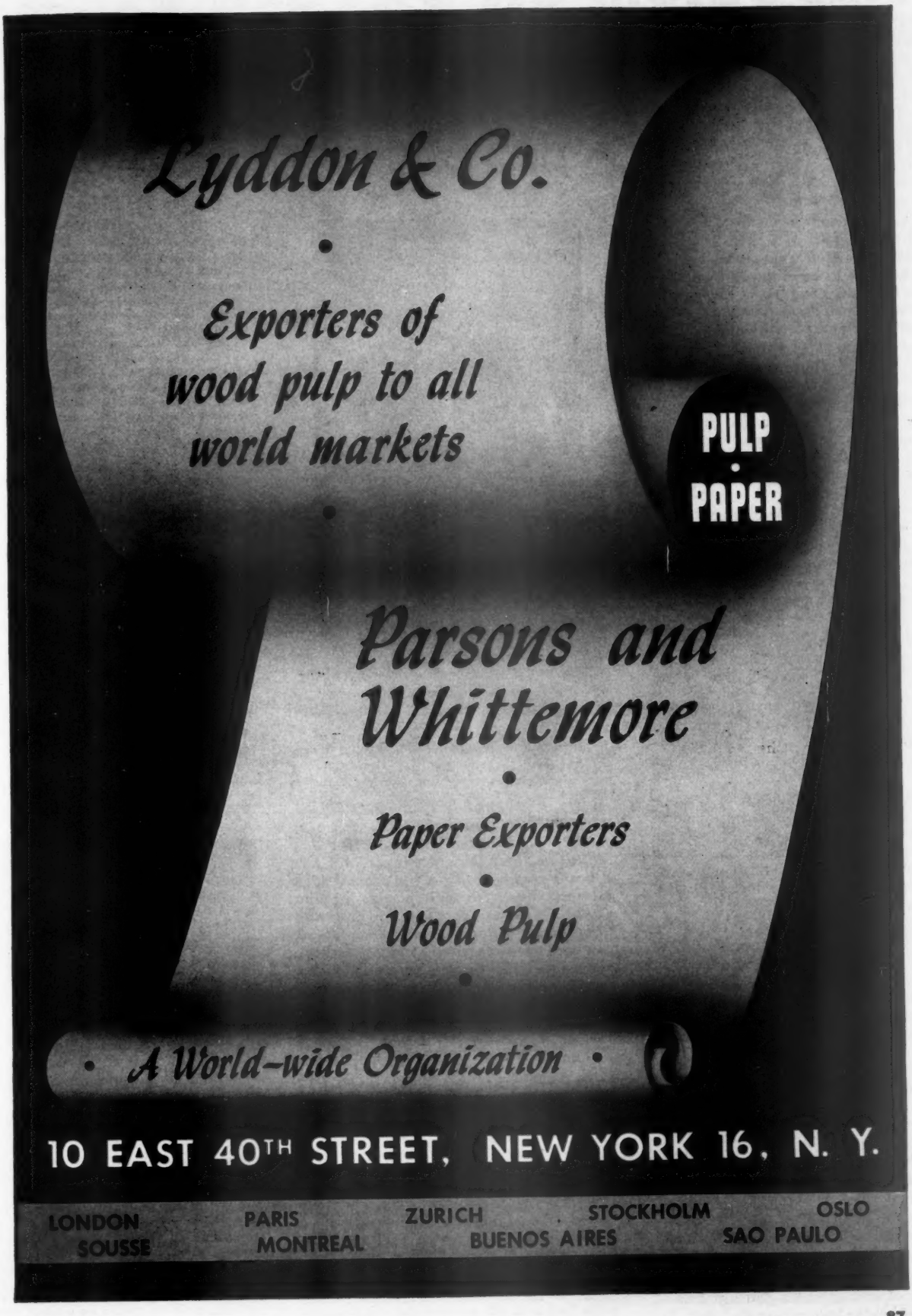
A paper on fundamental data relating to spray drying of sulfite waste liquor was presented by L. C. Jenness, R. M. Stinchfield, H. H. Fogler, and F. H. Herbolsheimer relating to "Spray Drying Co-efficients for Sulfite Waste Liquor." The data presented should primarily be of interest to fabricators of spray drying equipment.

A. E. Markham, Hilda D. Agar, and J. L. McCarthy of the University of Washington, Seattle, Wash., in their paper, "Continuous Production of Yeast from Sulfite Waste Liquor on a Laboratory Scale," described the process and gave yields of yeast from waste liquor. Tests indicated the presence of the vitamins, riboflavin, nicotinic acid and pantothenic acid.

"The Pulp and Paper Laboratory of the University of Florida" was fully described by George B. Hills and William J. Nolan, University of Florida, Gainesville, Fla.

With an apparent expanding of research facilities in various universities and colleges, as well as regular government agencies, it might be reasonable to suggest the formulation of a research activity committee of the technical association for the open discussion of research projects relating to pulp and paper manufacture. In this respect, results of a more pertinent value might be obtained with minimum duplication of effort.

ATTENDING PAPER WEEK (L. to R.): W. B. LINCOLN, JR., Inland Container Corp.; H. G. SCHMITZ, A. O. Smith Corp.; DR. ROBERT S. ARIES, Brooklyn Polytech, and active in Northeastern Wood Utilization Council; FRANK VAUGHN, Sprout Waldron Co.; GEORGE PRINGLE, Ass't. Chief Engineer of all Mead Corp. Mills; WERNER KAUFMAN, Executive Committee of the Technical Ass'n; STEVE KOKOLICH, Lee Paper Co.; and ROBERT BAUM, Pacific Coast Representative of Bulkley, Dunton.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SYMPOSIUM ON OXYGEN DEMAND

Of Pulp and Paper Mill Effluents

By Dr. Harry W. Gehm

Technical Director, National Council for Stream Improvement of the Pulp, Paper and Paperboard Industries, who led the Symposium.

An entire afternoon session of the "Water Section" of the technical association was devoted to the presentation of papers and discussion of the determination of B. O. D. of pulp and paper efficient, together with methods for studying stream deoxygenation and reaeration.

In my opening paper I stressed the usefulness of this determination when applied in the proper manner as an index of stream deoxygenation. The factors affecting the test as employed for pulp and paper mill effluent were received and a number of suggestions regarding its application to specific wastes were made. Data on oxidation rates of a number of common wastes showed that for most waste waters the rate over a five-day period did not vary greatly from that established for sanitary sewage when seeded and supplemental dilution water was employed. Figures were also presented showing the B. O. D. of various types of fiber and curves comparing the oxidation rate of dissolved matter and fiber were compared. These showed the fiber to oxidize at a fairly high rate but slower than dissolved matter the difference being explained by the fact that liquification of the fiber had to be accomplish by microorganisms prior to oxidation.

Despite the shortcomings and complications brought into the general picture by refinements employed in research, the "Standard Method" for the B. O. D. test is applicable and most useful to the industry in projecting the effect of wastes on stream deoxygenation.

Succeeding papers were presented by F. W. Kittrell of the Tennessee Valley Authority, Knoxville, Tenn., and Prof. C. J. Velz of Manhattan College, New York. These dealt with methods for conducting stream surveys in such a manner that accurate evaluations of deoxygenation and reaeration could be established. The factors influencing these phenomena were recounted and their relative importance pointed out. Necessity for determining time of passage of streams and sampling in accordance with this was stressed by both speakers.

Both speakers pointed out that in respect to deoxygenation and reaeration each stream is an entity into itself and the basic constants must be established for each one.

D. Paul Rogers of the Pennsylvania Department of Health in his paper presented a method for calculating the B. O. D. value from observed oxygen depletions of several dilutions of a waste sample on the basis of 50% depletion. This technique assumes that depletion is a linear function of the oxygen demand. However, this is not the case for many waste waters and the suggested calculations are limited in application.

HARRY W. GEHM, native of Elizabeth, New Jersey, received his bachelor's degree at Lafayette, his master's at Columbia, and PhD. at Rutgers. For years Dr. Gehm was an associate in department of sanitation in experimental station at Rutgers and his eventual connection with National Council for Stream Improvement was a natural one. He jointed it in 1944 as Technical Advisor. He is widely known for articles in scientific journals and is recipient of many awards for high achievement in research and development. No office-chair consultant, he is almost constantly traveling to mills all over North America.

Borden and Woodcock reported on research designed to measure toxicity of a number of chemicals to aerobic oxidation by taking into account adaptation of seeding organisms and detoxification of the toxicant. The technique employed, which involved reseeding, was most elaborate although the oxygen demand of the seeding material was not accounted for.

The purpose of these studies was to investigate the possibilities of employing chemicals for reducing the oxidation rate.

The program stimulated considerable interest and discussion and the importance of oxygen demand in studying stream pollution problems is reflected by the large amount of experimental work being done.

IN THEIR APPRAISALS ON PRECEDING PAGES of the paper and pulp sessions, respectively, written especially for this magazine, both Mr. McGregor and Mr. Vincent commented on the tremendous interest shown in two papers on the Curlator. These papers were given at the Canadian meeting in Montreal in January and were repeated at the New York meeting in February. Because so many were interested in these papers, we present important parts of the papers here:

Curlated Pulp—a New Approach to Pulp Processing

H. S. HILL, J. EDWARDS and L. R. BEATH
Price Bros. & Co., Ltd., Quebec, P. Q.

This paper describes a mechanical process for imparting permanent bends, kinks, and twists to pulp fibers; it lists some of the many changes which the process can bring about in pulp and paper properties, and indicates general fields of usefulness for the process and for the product, "Curlated Pulp."

The process, in essence, is extremely simple. Nodules of high consistency pulp are caused to roll in continuously changing directions between two surfaces which compress the nodules while they roll. All the essential requirements of the process may be accomplished on small scale by rolling a nodule of pulp with a circular action between the thumb and finger and continuing the action for a small part of a minute. Similarly, on a somewhat larger scale, the process may be carried out by squeezing a handful of slush pulp to a consistency of 15 to 25% placing the lump of de-watered pulp on a suitable tractive type of surface such as a piece of coarse canvas spread on a table, then breaking down the lump into crumbs or nodules

(Continued on page 100)

PHOTO OF CURLATOR IN ACTION

Personals

NORTHEAST

FREDERICK WIERK, consulting engineer of Great Neck, N. Y., was one of three recipients of the Stevens Honor Award Medallion for 1949. The award was for notable achievement in the fields of process plant design and naval air station design. Mr. Wierk, well known for his work in the pulp and paper industry, designed the "Wierk hut" which is internationally known as the Quonset hut.

S. K. BRADLEY, formerly director of chain store sales for Union Bag & Paper Corp., New York, has been promoted to Eastern district manager of multiwall sales. He is succeeded by E. M. Rickel, former assistant director of flexible packaging sales.

JOHN H. HEUER, technical director of the Central Laboratory of St. Regis Paper Co. at Deferiet, N. Y., enjoyed his first visit with his parents in Longview, Wash., in 12 years during a recent tour of the Pacific Coast. His father, Bob Heuer, is shift superintendent of the sulfite pulp mill of Weyerhaeuser Timber Co. in Longview.

A GALAXY OF PULP AND PAPER NOTABLES are taking the teaching rostrum in the 1949 Survey Course in Pulp and Paper given at New York University from Feb. 9 to May 25. Among them: P. J. Massey, St. Regis Paper Co.; Vance Edwardes, International Paper Co.; Dwight E. Jones, E. D. Jones and Sons; Arthur Pollack, consulting engineer; Chester G. Landes, American Cyanamid; Phil H. Goldsmith, Pusey & Jones; Helen U. Kiely, American Writing Paper Co.; Norman Bearse, Champion International Paper Co.; Burton Berg, Mead Corp.; Kenneth P. Geohegan, Howard Paper Mills; J. D. Malcomson, Robert Gair, Inc.; Henry Savage, International Paper Co.; and E. W. Tinker, American Paper and Pulp Association.

SEYMOUR JONES, vice president in charge of sales of the Brownville Paper Co., Brownville, N. Y., died late in February in his hotel while attending Paper Week.

ATWELL B. WILLIAMS, sales manager, Mechanical Roll Division, Americano Wringer Co., Inc., Woonsocket, Rhode Island, died at his home in Smithfield, R. I., Feb. 27. Mr. Williams was 52 years old.

FOSTER DEE SNELL, president of Foster D. Snell, Inc., New York firm of consulting chemists and engineers, has been named by the Society of Chemical Industry, London, to receive its Gold Medal for 1949.

DR. R. H. BALL of the New York office, Celanese Corporation of America, has returned from Port Edward where he visited the site of the subsidiary Columbia Cellulose Co.'s high alpha pulp mill.

WARD PITKEN, in charge of pulp and paper industry sales for Oliver United Filter, was a west coast visitor in February, returning to his New York headquarters in time for Paper Week.

PROF. DEXTER PERKINS (left) who will deliver the Gottesman Lectures at University of Uppsala, Sweden, this year. Prof. Perkins, of the University of Rochester, will take American history as his subject. He has been head of Rochester history department since 1925. The lectures are financed by fund established by D. S. GOTTESMAN, President of Gottesman & Co. and Central National Corp. of New York and donated to Uppsala in 1947. Last year the Gottesman lecturer was PROF. STANLEY T. WILLIAMS, Professor of American Literature at Yale.

CARL W. STEVENS (right) who has just joined the staff of Trundle Associates, Inc., of Cleveland, O., as Assistant to the President. Mr. Stevens was recently in paper brokerage business in Chicago and prior to that with St. Regis and Ammunition Container Corp., Harvey, Ill.

Calkin Named Director Of U. of Maine Department

Of great interest to this industry of the Northeast is the appointment of John B. Calkin (right), of New York, as director of the Department of Industrial Cooperation at the University of Maine, Orono, Me. According to Dr. Arthur A. Hauck, president of the university, the appointment carries with it an associate professorship in chemical engineering. Prof. Lyle Jenness who has been acting head of Industrial Cooperation will now devote his full time to duties as head of the chemical engineering department.

Mr. Calkin's background assures Maine's traditional attention to the pulp and paper industry. From 1943 to 1948 he was coordinator of research for the Union Bag & Paper Corp. Earlier connections were with Dennison Manufacturing Co., Framingham, Mass., and Brown Co., Berlin, N. H. More recently he had established himself as a consultant to the pulp and paper and chemical process industries and he will continue to maintain offices at 500 Fifth Ave. Mr. Calkin graduated from Haverford College in 1926 and received a master's degree there in 1927. In 1928 he was awarded a master of science degree in chemical engineering at Maine where he was a teaching fellow. He has also studied at M.I.T. and Cornell.

JOSEPH A. McFADDEN who has been handling pulp and paper industry business for the Chemical Bank and Trust Co. is now assistant vice-president located at 165 Broadway, New York City.

STANLEY O. STYLES has resigned from Martin Cantine Co. after 36 years' service to become New York sales chief for Hollingsworth & Vose Co. of East Walpole, Mass., and has opened a new office at 41 Park Row, New York.

One of the Men Behind EASTWOOD WIRES—

John Race

KEEPS "BOBBIN" ALONG

Thousands of feet of shute wire are uniformly wound on the bobbin which John Race holds in his hands. These bobbins ride the shuttles that speed back and forth across our looms.

We depend on John's skill and care for his share of the thousands of bobbins we use each day. Miles and miles of shute wire are needed daily to weave fourdrinier wires and wire cloth.

This is another of the many painstaking operations necessary to produce uniformly woven wire.

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Personals

CANADA

F. L. ALLEN, formerly Manager of the Newsprint Manufacturing Department, Canadian International Paper Co., has been appointed Manager of Manufacturing in charge of all operations in all five I. P. mills in Canada. His office is in Montreal.

F. J. GIFFEN, until recently assistant to the manager of manufacturing, Canadian International Paper Co., has been placed in charge of the company's Gatineau, Three Rivers and Dalhousie mills. He was chairman of the technical section, Canadian Pulp and Paper Association, last year and attended the Vancouver, B. C., sessions in September.

ARTHUR SCHMON, president of Ontario Paper Co., with mills at Thorold, Ont., and Baie Comeau, Que., has worked out with *HAROLD S. FOLEY*, and other officials of Powell River Co., a plan whereby the two companies collaborate on research and development.

ARTHUR G. POUNSFORD has resigned as directer of manufacturing, Provincial Paper Co., Port Arthur, Ont. He was for many years associated with the industry at the Lakehead and directed the building and was manager of Port Arthur Pulp & Paper Co., which later became Provincial Paper Co.

ROYAL D. PACKARD, formerly chief engineer of Brown Corp. at La Tuque, Quebec, has joined the staff of Stadler, Hurter & Co., consulting engineers, Montreal.

B. M. KENNY, formerly assistant general sales manager of Waterous, Ltd., Brantford, Ont., has been appointed general sales manager. *N. L. ELLIOTT* is assistant general sales manager.

DONALD DICK, paper production manager at Howard Smith Paper Mills in Cornwall, Ont., is lieutenant commander of the colorful Stormond Dundas and Glengarry Highlanders in Cornwall. He commanded this kilted unit on the Pacific Coast during the war.

TORE AHLEN, consulting engineer in Canada for the Swedish Flakt company and also for Paper Machinery, Ltd., with his offices at Canada Iron Foundry, Three Rivers, Que., won fame at the Sun Valley, Ida., skiing championships recently by taking first place in the veterans' class grand slalom. A solid gold stickpin was his prize.

IVAN HENRY ANDREWS, now living in Vancouver, B. C., as executive assistant of Powell River Co. and chief advisor on all technical matters for the company, is much better known as "Harry" Andrews. The Powell River Digester let the cat out of the bag, in saying "not even his best friends know about the Ivan Henry handle." He is one of British Columbia's noted chrysanthemum growers.

GORDON CHALMERS, formerly with the engineering department, Spruce Falls Power & Paper Co., Kapuskasing, Ont., has joined the staff of Ross Engineering Co., Montreal.

M. B. SHIRLAW has been appointed superintendent of E. B. Eddy Co., Hull, Que. He was formerly with Howard Smith Paper Mills at Beauharnois, Que.

G. L. M. (Gus) HELLSTROM, manager and director of Paper Machinery, Ltd., Montreal, after a busy period including attendance at Montreal and New York conventions, took a short vacation trip in March to the West Indies.

JAMES GOW WYLLIE, of Corner Brook, Nfd., was recently elected one of the directors of Bowater's Newfoundland Pulp & Paper Mills. He is the second resident of Corner Brook to become a director of the British-owned sulfite and news mill, the other being General Manager H. M. S. Lewin. Mr. Wyllie, born in Glasgow, has been comptroller of the company for three years and prior to that was with Howard Smith Paper Mills. He is now an assistant general manager.

BRIAN McMAHON, formerly with Marathon Paper Mills of Canada at Marathon, Ont., has been appointed technical superintendent of Canada Paper Co., at Windsor Mills, Que.

GEORGE C. WINLOW, widely known in the industry, has retired as Sales Director and a Director of the company, E. B. Eddy Co., Hull, Que., due to ill health, according to announcement by W. S. Kidd, President. Mr. Winlow has been in the industry 54 years, during which he has been Sales Manager of Alliance Paper Mills and J. R. Booth, Ltd. Since 1944 he has been Sales Director of the combined Booth interests and E. B. Eddy Co.

H. R. MacMILLAN, president of Nanaimo Sulfate Pulp, Ltd., whose kraft mill is now under construction near Nanaimo, B. C., held a "fireside chat" at Malaspina Hotel, Nanaimo, with key officials of his company.

DR. N. G. M. TUCK, formerly with the Pulp and Paper Research Institute in Montreal, has been appointed to the research staff of Howard Smith Paper Mills at Cornwall, Ont.

R. A. MOON, acting wood mill superintendent, Australian Newsprint Mills of Boyer, Tasmania, planned to visit Portland, Scotia, Longview, Everett, Seattle and Vancouver during a flying visit to this continent in March.

A. P. JEWETT of Toronto has been appointed general manager of Provincial Paper Co., Port Arthur, a subsidiary of Abitibi Power & Paper Co. He has been with the company 32 years, latterly as director of sales.

A. W. BENTLEY, for many years woodlands manager of Bowater's Newfoundland Pulp & Paper Mills, Ltd., spent some time in British Columbia in February conferring with provincial government officials, ostensibly with a view of surveying possibilities for his company's expansion program in the west. He retired from his active role with the company several months ago.

NORMAN FRASER, finishing room superintendent of Powell River Co., who joined the company in 1922, died recently in the Powell River, B. C., hospital.

DR. JOHN S. BATES, Montreal, director of Prince & Pierce, Ltd., accompanied by *HARRY HUGHES*, manager of the company's New York office, was a recent visitor to the west coast.

R. T. MORGAN has succeeded H. C. Lee as acting plant engineer, Canadian International Paper Co. at Dalhousie, N. B.

P. A. "PETE" FRATTINGER, assistant manager of Pacific Mills, Ltd., at Ocean Falls, B.C., is leaving the company after ten years of service. During the war years he was with the British Purchasing Commission and Prince Rupert, B.C., shipyards.

ROBERT H. HURLE, chief engineer, Associated Pulp & Paper Mills, Ltd., of Burnie, Tasmania, returned to Australia by plane late in February after visiting Vancouver and other Canadian pulp and paper centers.

DR. N. A. OSARA, managing director of the Central Forestry Association, Finland, spent several days in British Columbia and Quebec during his tour of pulpwood developments in Canada recently.

J. CORNELIUS, production superintendent, and *A. R. SLOMAN*, research manager, Associated Pulp & Paper Mills, Ltd., of Burnie, Tasmania, are planning a world tour in connection with the pulp and paper industry this summer and will visit the United States and Canada after spending some time in the United Kingdom.

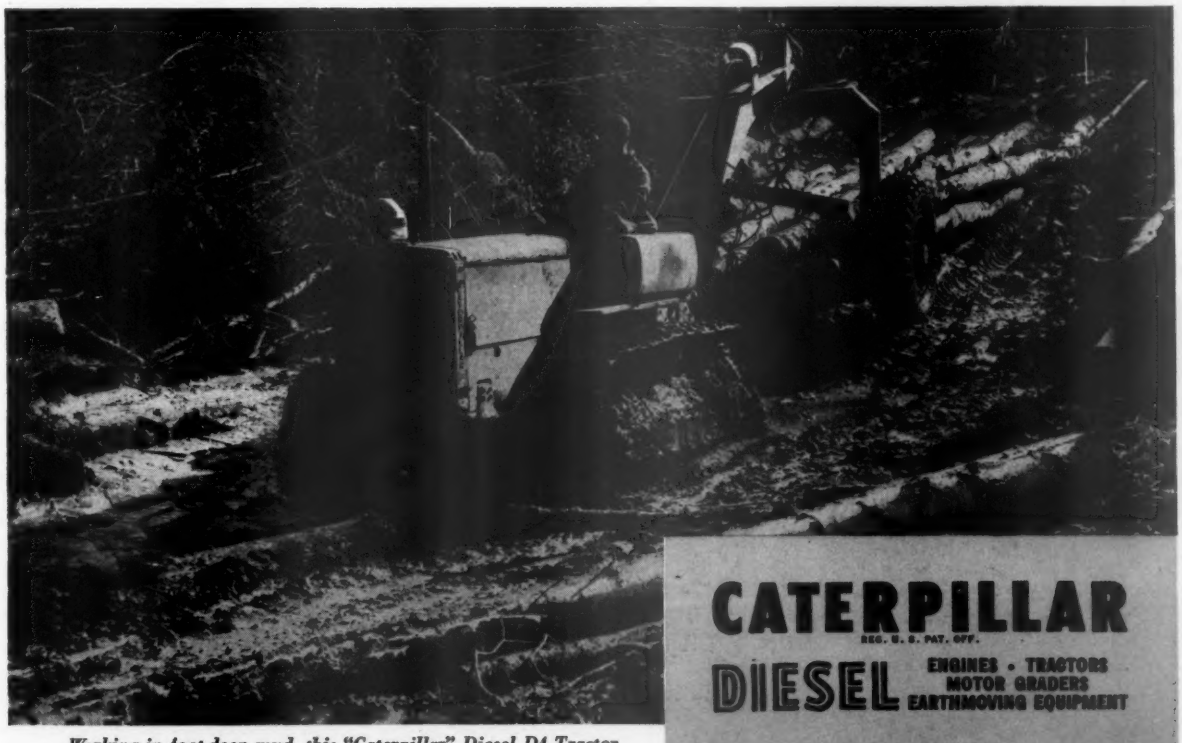
Good-bye to hand yarding

HERE'S a piece of equipment that has changed a lot of pulpwood logging habits. The old days when a chopper cut up his logs in 4-foot lengths, stacked them in the woods and waited for horse-drawn bobsleds to load and haul them out, are gone for good in many sections.

Instead, a "Caterpillar" Diesel Tractor with a Hyster sulky snakes tree-length logs from the cut right out to the gang saws, and there's only one handling.

The B. F. D. Co., of Oakland, Maine, has many "Caterpillar" units on the job. On rocky mountainsides and in deep mud, they get out the logs where horses would be hopelessly bogged down. W. Dearborn, Asst. Logging Supt., says: "This 'Caterpillar' Diesel's traction in mud is outstanding. It will haul all the logs we put on the sulky. It's given us tremendous savings and multiplied our production."

Caterpillar Tractor Co., San Leandro, Calif.; Peoria, Ill.



Working in foot-deep mud, this "Caterpillar" Diesel D4 Tractor, with Hyster sulky, handles 2 cords of tree-length wood on a 3000-foot haul. Owned by B. F. D. Co., Oakland, Maine.

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

"The outlook for a permanent timber supply in North America sufficient for all our needs is more hopeful today than at any time in the past."—Royal S. Kellogg, secretary of Newsprint Service Bureau, New York.

HARDWOODS VS. PINE BATTLE

Southern Group Reviews Its Work

Looking back over 12 years' work, the Southern Pulpwood Conservation Association in its annual meeting in February in Atlanta, Ga., found much had been accomplished; then set its sights for a determined effort to follow more closely the cutting program adopted in 1937.

The accomplishment of this may be aided by division of the territory into four zones having a council composed of a delegate from each mill.

Earl Porter, International Paper Co., Mobile, Ala., urged adherence to the 1937 standard and referred to association members dropping out because it has issued a leaflet urging farmer woodlot owners to sell pulpwood by the cord and to market saw timber, poles, etc., each in proper category.

Ray Weston, of Hollingsworth & Whitney Co., Mobile, retiring association president, told the members "we're doing a wonderful job compared with the past" but dryly added they shouldn't "pat themselves on the back." Last month we reported election of E. J. Gaynor III, vice president and manager of Brunswick Pulp & Paper Co., as the new Association president.

The setting up of the organization on a zone basis had been voted by mail and the final step was effectuated at the meeting. Under the new arrangement each mill in one of the four zones will name a "zone delegate" to sit with others in matters pertaining to association work in their respective areas. These delegates will select three directors from the zone, one of whom when practicable will come from "mill management." Directors name officers for the association at the annual meeting. Mills must name their delegates 45 days in advance of the annual session which must be held between Jan. 25 and Feb. 10. Directors for 1949 are:

Zone 1. Texas, Arkansas, and Louisiana west of Mississippi: Earl Porter (chairman), International Paper Co.; Richard W. Wortham, Southland Paper Mills, Inc.; and, C. Y. Townley, Texas Forest Farms, Inc. (Champion Paper & Fibre).

Zone 2. Mississippi, Alabama, Louisiana east of Mississippi, west Florida including Panama City: Vertrees Young, Gaylord Container Corp.; Russ Andrews, International Paper Co., Panama City; Vance Miles, Gulf States Paper Corp.

Zone 3. East Florida (including Port St. Joe), Georgia, South Carolina below Columbia (excluding Piedmont): Jos. E. McCaffrey (chairman), International Paper, Georgetown, S. C.; James H. Graham, West Va. Pulp & Paper; and Guy H. Wesley, National Container Corp.

Zone 4. South Carolina north of Columbia, North Carolina, Tennessee, and Virginia: J. H. ("Bud") Johnson (chairman), The Chesapeake Corp., West Point; Ken S. Trowbridge, North Carolina Pulp Co.; and Walter G. Schwab, Glatfelter Pulp Wood Co., LaPlata, Md.

SOME OF IMPORTANT PERSONALITIES AT ATLANTA (left to right):

EARL PORTER, Woodlands chief for Southern Kraft Div., International Paper Co., Mobile, Ala., headquarters—at left—is making talk in which he urged members to adhere to 1937 good forestry standards. Others (top l. to r.): Outgoing President RAY F. WESTON of Hollingsworth & Whitney (last month we published picture here of his successor, E. J. GAYNOR III of Brunswick Pulp & Paper); J. H. JOHNSON, of Chesapeake Corp., who described practices in Virginia; RUSS ANDREWS, I.P., of Panama City, and KEN TROWBRIDGE of Plymouth, N. C., both new Zone Directors.

Lower row shows other new Zone Directors (l. to r.): JAMES GRAHAM of West Va. Pulp & Paper; WALTER SCHWAB of Glatfelter organization; GUY WESLEY of Container Corp.

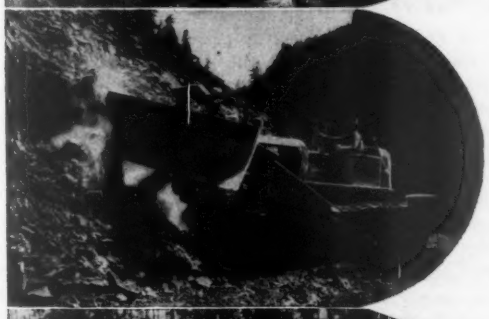
Malsberger's Report

Henry J. Malsberger, forester-general manager, made a highly factual report in which he listed: 1,840 contacts by staff with members, landowners, privately employed foresters, and publicly employed foresters, with contacts by conservation engineers totaling 5,700 persons; 255 news story releases; 295 speeches by

If your logging problem is CARCO EQUIPMENT WILL SOLVE IT

Fast Decking?

A CARCO "R" Hoist equipped tractor coupled to a portable spar can do a fast job of decking from a clear cut or a prelog side —can be moved and reset in a hurry.



Road Building?

CARCO Hydradozers and Cabledozers build logging roads as you go. Both models in either straight or angle blade feature smooth, fast-acting, easily-adjusted blades.

Ground Skidding?

The CARCO "S" Winch makes light logging possible with small wheel and crawler tractors. There is a CARCO winch model for nearly every crawler tractor ever made.

Arching?

CARCO Log Carts are required equipment for small timber loggers. Stable, balanced and steady performers, they more than double the log hauling capacity of your tractor.

***Call or write your tractor dealer today for CARCO equipment literature and specifications.**

PACIFIC CAR AND FOUNDRY COMPANY

RENTON, WASHINGTON U·S·A

staff and others compared with 70 in 1947; attendance at 125 meetings; distribution of 400,000 leaflets, including the "How to Make the Most Money from Your Timber"; distribution of 22,500 posters; 70 exhibits; 56 prints orders of film on planting.

The fire film was produced but distribution is scheduled in 1949; a third film, natural regeneration, will be distributed in 1949.

In checking upon compliance with Association standards, area foresters and personnel of members reporting showed that 1,585 inspections were made of producers cutting on non-company lands, showing 60% in partial cuttings and 22% seed tree cuttings.

Compilation of returns furnished by only 12 of the 23 wood-consuming memberships indicated that volume removed by types of cuttings is 31% from thinings, 21% seed tree, 8% from salvage, 15% from land clearing, and 25% from clear cutting. From an acreage standpoint 29% was thinned, 17% cut to seed tree, 19% from salvage, 13% from land clearing, and 22% from clear cut.

Mr. Malsberger found an encouraging note in the increased conservation activities of dealers and individual producers.

Battle of Pine vs. Hardwoods

Over much of the loblolly pine regions of the coastal plains in the southeastern states, if owners are going to grow full crops of pine, then they must be prepared to take adequate cultural measures, declared I. T. Haig, director, U. S. Southeastern Forest Experiment Station. He quoted early 18th century reports of hardwood dominance in the section at that time. John Lawson, the surveyor-general for North Carolina, had traveled 125 miles in what is a prevailing pine area today and had seen just one outstanding coniferous tree.

V. J. HARDENBROOK (left), of New York, Vice President of Union Bag & Paper Corp., banquet speaker at Atlanta meeting, who urged preservation of nation's spiritual and social as well as natural resources.

HENRY J. MALSBERGER (right), Forester-General Manager of Southern Pulpwood Conservation Association, who told of its many activities.

Said Mr. Haig: "Hardwood dominance is readily understandable in the 16 million acres of upland hardwood forests, and the 8 to 10 million acres of hardwood bottoms and swamps of these areas may be properly excluded from our discussion. But over much of the remaining 60 million acres now classified in pine types, perhaps we foresters have been overly slow in realizing this pine can only be perpetuated by arresting natural trends; that such pine forests are largely the results of land clearing, logging, and uncontrolled fire."

Reversion of pine lands back to hardwood was cited as from the Virginia survey that showed two-thirds the volume of saw timber in pine but two-thirds the volume of saplings and pole timber in hardwoods. Or in an inventory of South Carolina stand that showed that in 1947 hardwood occupied 39% of forest land against 29% in 1936.

These new hardwood stands, said Mr. Haig, are not as valuable as pine, nor do they include the more valuable species, but rather inferior varieties. The total consumption of hardwoods for rayon and associated products has amounted to only 4% of total pulpwood volume.

Methods of hardwood control were discussed, including burning, tree poisoning, and foilage spraying.

The hardwood problem was reported as aggravated by thinning or improvement cutting in over-top mature stands.

Methods to Resist Hardwoods

Practical methods used to resist hardwood intrusion were told by J. H. Johnson, The Chesapeake Corp., West Point, Va. He referred to the 2.4 million acres of nominally pine stand but of which only 50% was pine stock; and of 900,000 acres that had reverted to pure hardwood. The company has a drastic combat program.

Where overstory throws plenty of seed but the hardwood understory prevents pine regeneration, the company uses a bulldozer to push over younger stock which is further disrupted by dragging stumps behind the tractor. The best results, he said, are with use of a new mammoth Allis-Chalmers HD19 tractor. Larger hardwoods are poisoned with ammate. Where hardwood understory exists but pine seed is insufficient, planting must be done.

Hardwoods are sold off the land whenever possible but not all of the trees are merchantable, some being inferior grade or species. Trees have been sold for as low as $5 per M feet, log scale. The 'dozer treatment requires 1¾ hours per acre. Mr. Johnson stated there is no form of cutting that will bring 100% pine repro-

ALSO PRESENT AT THE ATLANTA PULPWOOD MEETING (Left to right):
Top row—H. A. MAAS, Southland Paper Mills, Lufkin, Tex.; W. C. JONES, Panama City, Fla.; GEORGE MOSELY, Forestry Equipment Co., Jacksonville, Fla.; ROGER WOLCOTT, International Paper Co., Raleigh, N. C.; CARL A. BROWN, International Paper Co., Augusta, Ga.; BILL MOORADIAN and LEO MOORADIAN, pulpwood dealers of Hapeville, Ga.; WILLIAM E. GIBBONS, International Paper, Conservation Forester, Augusta; VIC J. KUZMITZ, International, Procurement Supervisor, Macon Ga.

Bottom row—N. M. WHITE, North Carolina Pulp Co., Plymouth, N. C.; VANCE MILES, Gulf States Paper Corp. (The next five represent International): B. R. HARLEY, Augusta; J. T. HENRY, Gainesville, Fla.; PAUL F. HENZLER, Lake City, Fla.; M. H. STALMUKE, Jacksonville, Fla.; H. M. ROLLER, Jr., Conservation Forester, Gainesville, Fla. ROBERT C. BRENT St. Joe Paper Co., Tallahassee, Fla.; and G. C. SHOPTAW, Union Bag & Paper Co., Savannah, Ga.

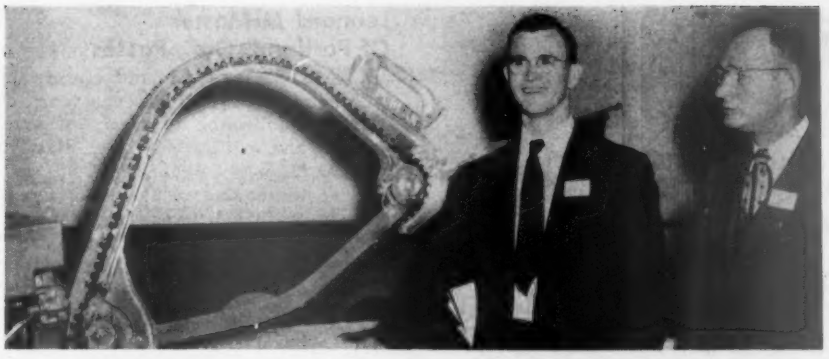
duction; the company had tried all kinds. The seed tree method was found best, but yielded 50%.

The Camp Mfg. Co., of Franklin, Va., he said, goes through mature pine stands (where there is space to maneuver) with a heavy disc plow. Continental Can (Hummel-Ross Division), of Hopewell, Va., pulls logs through the hardwood understudy with agricultural tractors. Fire was also a useful tool in hardwood control. The forester, he declared, must grow the trees the mill wants.

Adherence to standard forest and forest-method terminology was urged by D. J. Weddell, dean of the University of Georgia forestry school. Work of the American Pulpwood Association was described briefly by Secretary Brinkerhoff. Dean Korstian of Duke University forestry college spoke briefly.

The Soil Conservation Service had an interesting exhibit of "before and after" treatment of land. Their figures for Georgia showed 49,322 farms of 9,842,189 acres participating. Of this land, 3,523,000 is woodland under plan with 200,000 acres additionally planned for reforestation. In Georgia the service operates 82 mechanical seedling planters (capacity 10,000 seedlings per day each).

In a highly inspirational address at the evening's banquet, V. J. Hardenbrook, vice president of Union Bag & Paper Corp., New York City, urged the individual to bend his efforts toward the preservation of all our resources—natural, spiritual and social.



A POULAN BOW POWER SAW is being presented to JOHN H. FORD (center), Farm Extension Forester, of Dadeville, Ala., by H. R. POULAN (right), who is President of Poulan Saw Co., Shreveport, La. This was at Montgomery, Ala., Conference.

Allen Addresses Group

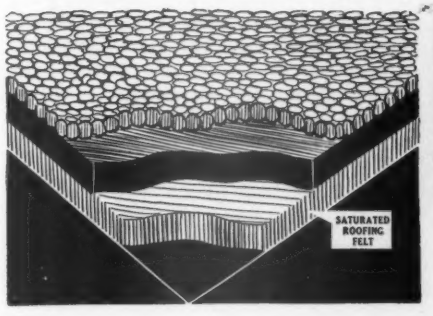
Despite expansion of the Southern pulp and paper industry into a billion dollar size since 1933 the market for the South's wood fiber is still in its infancy, declared James H. Allen, vice chairman of the board, St. Regis Paper Co., at the Southern Forestry Conference in Montgomery, Ala., Feb. 18-19.

A dominant figure in southern mill expansion, Mr. Allen told representatives of private ownership of 7,000,000 forest land acres, five southern state foresters, and a number of federal forest men that the industry had created a market for pulpwood, providing a basis for the economic life of forestry; that without income, forestry stands a dead issue.

"In 1933." he pointed out, "56% of the wood used in making paper consumed in the U. S. or the equivalent yield of 13,680,000 acres of timber farm managed on a perpetual yield basis, was grown in European countries. In 1933, I estimated Southern mill capacity at 3,000 tons per day; with capital investment of $105,000,000. At the close of 1948, productive capacity had attained 19,500 tons per day, with capital asset value of $624,000,000."

In 1933, he said, sales of southern mills would not have exceeded $85,000,000 whereas, in 1948, they may be placed at $822,000,000. The 18,000 men employed in mills and woods in 1933 expanded to a combined employment of 128,000 men.

In 1933, wood consumption amounted to 1,800,000 cords, which, at a valuation of $5.00 per cord, brought a return of $9,000,000. In 1948, wood consumption in the South approximated better than $170,000,000.



Saturating felts . . . with high wood-pulp additions.

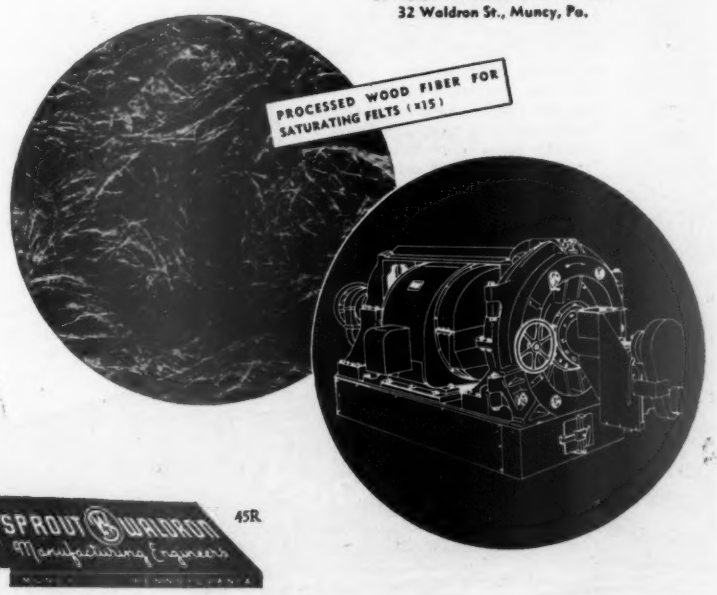
Because of lower manufacturing costs, modern dry felt producers are looking to wood pulp as a partial replacement for rags in the furnish.

On this service, Sprout-Waldron Refiners are the natural complement to the preliminary attrition of the heat and chemically softened wood chips. They assure high tonnages and discharge the pulp as slender fibers without degradation.

In felt production, S-W Refining improves quality and uniformity of saturation. Excellent folding properties are maintained.

Let us consult with you on your problem.

SPROUT-WALDRON & CO.
32 Waldron St., Muncy, Pa.



Personals

PACIFIC COAST

E. M. Mills Resigns Board

Edward M. Mills of San Francisco, one of the founders and a former president of Rayonier Incorporated, has resigned from the company's board of directors due to circumstances which prevented his active participation as a member, it is announced by Rayonier's president, Edward Bartsch.

Mr. Mills promoted organization and financing of three predecessor companies in Shelton, Hoquiam and Port Angeles, Wash., in 1926-28, which later were consolidated to form Rayonier, which he headed from 1937 to 1944.

Leonard McMaster Of Portland, Ore., Passes

Leonard McMaster, manufacturers agent on Pacific Coast for past seven years, died March 5, following illness of several months, and was buried March 8 at Portland, Ore.

Prior to moving to Portland, Ore., in November, 1941, he was sales manager of Asten-Hill Mfg. Co. at Philadelphia, Pa., for several years. In the West he represented Asten-Hill, Orr Felt & Blanket Co., Chromium Corp. of America, and American Wringer Co., Inc.

Mr. McMaster was a veteran of World War I, serving in the U. S. Army, First Division. During this conflict he was gassed, which contributed to his subsequent ill health. He was born in Philadelphia in 1890, and is survived by his widow, Mrs. Estelle McMaster. For the immediate future she plans to continue residence in Portland.

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WHAT GOES UP THE FLUE...
...puts a damper on efficiency. Steam cleaning restores it. Thousands of feet of PIONEER RUBBER Steam Hose help clear the flues . . . clean the stills, engines, machinery . . . drive the piles . . . keep the wheels of Western industry turning. PIONEER research again provides a flexible "tool" that heat and abrasion can't touch.
Meeting such demands of Western industry's particular problems has been the specialty of Pioneer Rubber Mills for more than 60 years.
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Doug Armstrong Dies

Douglas B. Armstrong, paper mill superintendent of Oregon Pulp & Paper Co., Salem, Ore., died unexpectedly at his home March 3. Working at the plant most of the morning, he went home just before noon, mentioning that he was not feeling well. He died early in the afternoon.

Mr. Armstrong, 47 years old, participated in the paper manufacturing industry most of his life. He became affiliated with Oregon Pulp & Paper in 1924 and had been superintendent for five years. Prior to moving west he worked for Champion at Hamilton, O., and at International Paper Co. in Niagara Falls, N. Y. Survivors are Mrs. Norma Armstrong and three sons.

Martin Breuer Retires

Martin Breuer, after 28 years service with the organic chemicals division, E. I. DuPont DeNemours & Co., on the Pacific Coast, has retired.

Mr. Breuer went west from Chicago and pioneered the field for DuPont. During his years of contacting the industry he made a host of friends. The mills formerly contacted by Mr. Breuer will now be called on by Thomas D. Johnson, Jr., with headquarters in Portland, Ore.

It's Mr. Breuer's intention to acquire some acreage in the San Francisco Bay area and do some stock raising and gentleman farming. Also he's going to get in plenty of fishing. He's still living in San Mateo, Calif.

LOUIS BLOCH, board chairman of Crown Zellerbach Corp., of San Francisco, completed 55 years of service in Crown Z and predecessor companies during March, and now-a-days, under retirement plans, that is going to stand out as a remarkable record in the paper industry.

MR. and MRS. RAY E. BAKER have announced birth of a 7-lb. 4-oz. son, John Clinton Baker, on Feb. 26. Mr. Baker is manager of Weyerhaeuser Timber Co. pulp mills in Longview, Wash. In some circles it is anticipated that the new son will strongly resemble his father in that Mr. Baker's birthday is just one day later, Feb. 27.

ROGER E. CHASE, manufacturing representative of Tacoma, Wash., was returning home about mid-March from a trip to South America.

Dr. Gray King Joins Puget Sound Pulp & Timber Co.

Dr. Gray King has joined Puget Sound Pulp & Timber Co., Bellingham, Wash., as assistant technical director in charge of research, according to Erik Ekholm, general superintendent. Eric O. Ericsson is technical director.

Dr. King was recently with Rayonier Incorporation in Shelton, Wash., and prior to that with Mellon Institute in Pittsburgh and Celanese Corp. of America. He obtained his Ph. D. in cellulose and lignin chemistry from McGill Univ., Montreal.

In Pacific Coast technical association activities, he recently was moderator of a non-standard practices round table and has taken considerable interest in Shibley award contests.

Heppenstall E. I. S. Chipper Knives

When you install Heppenstall E.I.S. Chipper Knives you're bound to get *more* clean cut, uniform chips. The reason is simply this: Heppenstall Knives *stay sharp longer!* They produce greater chip yield with fewer oversized or bruised chips, less sawdust waste.

Under the most severe service conditions, these solid alloy steel chipper knives retain keen edges longer . . . operate more hours between grinds because they're made from Heppenstall's own Electric Induction Steels—forged, heat treated, precision finished to give maximum service.

All of these proved advantages, plus the economies of Heppenstall's Standard Slot Dimensions, mean improved chip production at lower production costs.

Why not order a set of Heppenstall E. I. S. Knives for your chipper today?

50th ANNIVERSARY 1899 1949

HEPPENSTALL COMPANY
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Personals

MIDDLE WEST

F. W. STRIDDE, manager of Kimberly-Clark's mill at Niagara, Wis., for 20 years up to his retirement in 1944, died March 4, at his home in Iron Mountain, Mich., at the age of 66. Mr. Stridde was with the Kimberly-Clark organization for 40 years altogether. He was at the Kimberly, Wis., mill, in Neenah, Wis., headquarters, and as a representative in Escanaba, Mich., before going to Niagara.

FRED C. DAMP has resigned as general superintendent of the Ward Paper Co., Merrill, Wis., and has accepted the position of paper mill superintendent with Flambeau Paper Co., Park Falls, Wis.

A GROUP OF WISCONSINITES whose pictures were taken by PULP & PAPER editor at recent Technical Association meeting in Appleton, Wis. From Mosinee Paper Mills Co. (left to right), GEORGE MARTIN, Asst. Technical Director F. G. PAVLICK, Asst. Chemical Engineer; WILLIAM EBERLE, Asst. Mfg. and Sales Technician; JOHN LINE, Mfg. and Sales Technician; and H. C. CRANDALL, Technical Director. Mr. Crandall is also hardworking Secretary of the Wisconsin Association.

PETER VAN LOON, of Kimberly, Wis., mill has joined life members of Kimberly-Clark Corp. after 34 years service.

A. M. (Pete) HEALD, in converted products research for Marathon Corp., is new Chairman of Lake States Technical Association.

Fishing is not all luck. It takes skill and the right tackle. Pressing paper is like that — and our business is to make the right tackle for you.

The DRAPER Felt

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

CANTON, MASSACHUSETTS

RALPH E. BRIGGS, *Sales Manager*

• BRADFORD WEST, *Pittsfield, Mass.* • WILLIAM N. CONNOR, *Jr., Canton, Mass.* • L. H. BREYFOGLE, *Kalamazoo, Mich.* •
• WALTER A. SALMONSON, *2514 Northeast 59th Ave., Portland, Oregon* • L. L. GRIFFITHS, *Jr., Kalamazoo, Mich.* •

D. M. YOST, graduate of The Alabama Polytechnic has become technical director of The Sorg Paper Co. Since 1938, he has been with that company in Middletown, *D. G. GOODMAN,* newly appointed assistant technical director, graduated from Purdue in 1938 and has been with the company continuously, except for four years as captain in the Armed Forces. L. C. Currier, operations vice president, announced the promotions.

TOM GILLESPIE, well-known representative in Middle West and Lake States for Lockport Felt Co. and Cheney Bigelow, took a well-deserved vacation on the white sun-drenched sands of the Bermuda Islands after the New York convention. His wife, Edna, was persuaded she didn't have to hurry back to their country home at Lake Villa, Ill., and accompanied him.

CARL MAGNUS has been appointed superintendent of paper mill operations of Moraine Paper Co. (subsidiary of American Envelope Co.), West Carrollton, Ohio, according to President Carleton W. Smith. Mr. Magnus, a graduate of the University of Maine, has been in this industry since 1915, with Dill and Collins Paper Co., Eastern, American Writing Paper Corp., Standard Paper, Waterfalls Paper Mills and Wausau Paper Mills. Mr. Magnus also has been consultant and past president of the superintendents association.

MILTON A. SHREINER, one of Foxboro Co.'s ace representatives in the pulp and paper field, has been manager for some months now in Appleton, Wis., where he opened a new headquarters at 1233 West College Avenue. Milt used to be assistant to John J. Burnett, division manager in Chicago, and from there had a part in instrument installations in mills in distant parts of the continent.

Personals

SOUTH

P. L. McCALL, superintendent of the Corrugating Board Div., Sonoco Products Co., Hartsville, S. C., has been elected a member of the board of directors, succeeding his brother, W. H. McCall, who resigned. A 1919 graduate of Clemson College in textile engineering, Mr. McCall has been associated with the paper industry since that time.

A. H. GILDERSLEEVE, sales manager for the Northern Div., Sonoco Products Co., Hartsville, S.C., has been elected to the board of directors. Mr. Gildersleeve attended Taft School and Wesleyan University. Following his graduation in 1925, he joined the Climax Tube Co., and the Lowell Paper Tube Corp. (a subsidiary of Climax). He became vice president of both companies and when they became affiliated with Sonoco in 1933, he was named general manager of the Northern Division.

FRED B. SWANSON, JR., Gulf States Paper Corp. chemical department employe, has been initiated into the Alabama chapter of Tau Beta Pi, national engineering honorary. Mr. Swanson worked full time at the mill from 1938 until entering the service in 1943. Since 1946 he worked in the chemical department while attending the University of Alabama. He will graduate in June.

J. J. WILLIAMS, veteran superintendent of Halifax Paper Co., Roanoke Rapids, N. C., died recently.

J. J. (JOSH) WARD is new maintenance engineer in Pulp and Paper Div., Union Bag & Paper Corp., Savannah, Ga. He was formerly assistant to William McIntosh, Jr., who resigned as maintenance engineer in January.

J. A. McINTYRE, JR., and *F. M. ANDREWS,* respectively manager and superintendent of the old Rockingham (N.C.) Div. of Sonoco Products Co. (Hartsville, S.C.) are associated with the Rockingham Paper Products Co., which took over the converting unit of the division on March 1. Sonoco had discontinued the operation of the Rockingham plant, concentrating production at Hartsville.

PETE MIZELL (left), Pulp Mill Supt., Crossett Paper Mills, Crossett, Ark., whose department held the Crossett safety plaque for 1947, is shown here passing it on reluctantly to LONNIE GIBBS (right), Paper and Recovery Superintendent, whose department won it for 1948. Looking on, between them, is the Crossett Industries General Safety Director RUSSELL BELL. Mr. Gibbs' department worked 218,023 man hours with only 39 minor injuries. It went 19 months (314,701 man hours) in all with no disabling injuries.

His department won, he said, because of (1) increased boiler capacity, (2) monthly safety meetings and (3) a cleanup campaign.

Employers' Liability Law

An employers' employment liability law was enacted in Mississippi's last legislative session. Employers had been seeking such a statute, in the absence of which they were exposed to bombardment by damage suits rising from occupational injuries.

Mississippi has four wallboard plants (wood consuming), a paper mill and will soon have a large rayon pulp mill.

R. V. MILES, chief forester for Gulf States Paper Corp., Tuscaloosa, Ala., was elected chairman of the Southeastern Section, Society of American Foresters, for 1949. He succeeds Dr. Edwin Ziegler, of U. of Florida forestry school. William Sizemore, Florida, assistant state forester, Tallahassee, Fla., was elected secretary-treasurer.

HUDSON PULP & PAPER CO.'s mill at Palatka, Fla., has acquired the 10,700 acres of forest land held by George W. Hall, leading business man in Palatka and Putnam County, for $268,948.

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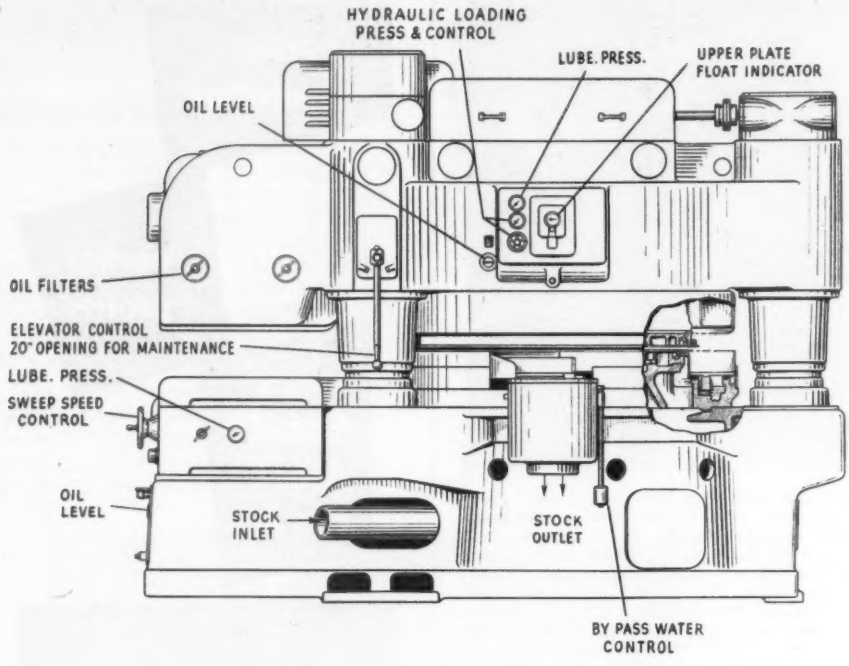
EXCERPTS FROM PAPERS ON THE NEW CURLATOR PROCESS

(Continued from page 88)



THE CURLATOR MACHINE AS USED AT RIVER BEND

under pressure by the flat of the hand using a gyratory type of motion and continuing the same action on the nodules for a minute or so with regrouping under the hand as necessary. Under this treatment, the nodules roll in changing direction while under compression, in the same manner as the single nodule behaves between the thumb and finger. A block having a suitable tractive surface may be substituted for the hand, and, of course, various mechanical means may be arranged to perform the required manipulation.

One of the fundamental requirements of the process is that the nodules traverse the contacting surfaces in rollwise fashion, that is to say, without slipping or smearing on the surface and without developing slip planes within the pulp itself. Another requirement is that the nodules are caused to roll in changing directions, although this change in direction may take place either continuously, as caused by gyratory motion of the working surfaces, or intermittently as accomplished by short, repeated, straight line action of the surfaces with regrouping and reorientation of the nodules between successive movements. A still further requirement is that the nodules be compressed while they roll.

Operating pressures are usually under 15 lb. /sq. in. of the surfaces contacting the pulp. Speed and pressure are interdependent in this regard, the lower the speed the higher the permissible pressure, and vice versa. The breakdown point between rolling and smearing is abrupt. It varies widely between different classes of pulp and between individual pulps of the same class. It is quite strongly affected by temperature, pH, and by certain additive ingredients. It has been found convenient to rate this property by what has been termed the "curlation number," which is the operating pressure in lbs. per sq. in., at which a standard sample of pulp breaks down from rolling to smearing when gyrated between standard surfaces at a standard speed.

Within the curlation limit, variation in degree of treatment can be obtained by control of the operating pressure on the pulp, the speed of movement of the contacting surfaces, and the duration of the action, in short, by the input of power. The power requirements of the process are unusually low. About 1 hp per daily ton is sufficient for some applications, and the general range is from ½ hp per daily ton. Consistency of the pulp has some effect on the result although, obviously, the local consistency of the nodules under direct action will depend more on the operating pressure than on any lower starting consistency. The usual range of consistency in carrying out the process is 15 to 25%.

The change in pulp properties resulting from two increasing degrees of curlation, applied to slush, unbleached sulfite of newsprint grade, shows that freeness tends to increase on curlation. A drop in burst and tensile is balanced by a sharp rise in tear. Stretch, both wet and dry, shows marked increase as does porosity (inverse of time reading shown). Stiffness tends

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to drop, and bulk, after an initial drop due to the elimination of shives, tends to rise.

Points both of similarity and of difference show up for curlation and drying. Strength properties and porosity exhibit quite similar trends for the two treatments, but stretch shows an opposing trend. Drying gives more bulking effect than curlation. In appearance, drying gives little of the typical matter effect produced by curlation and, of course, drying accomplishes no de-shiving or cleaning. When both curlation and drying are applied, the typical effects of each treatment appear to be additive, but in more pronounced degree when curlation precedes drying.

The question of the effect of beating on curlated pulp is a very complex one, for there are many kinds of beating and curlation, and many kinds of pulp. Comparative beating effects on curlated and untreated samples of a slush newsprint sulfite, the curlation treatment being rather light, shows that the more divergent of the initial properties of the curlated pulp tend to approach those of the untreated pulp during the course of beating. Certain other characteristic curlation properties, however, persist strongly throughout beating, as witness, dry stretch and porosity. On the whole, it would appear that much of the curlation effect is retained, although in some respects it is masked by the very positive beating effect.

In the different case of applying curlation after beating, very pronounced effects are obtained at all degrees of beating. Pulp quality comparisons on samples taken after increasing time of beating, part of each sample being tested, as-is, and another part after curlation, the pulp being unbleached newsprint sulfite, show that curlation of beaten pulps produces the same trend of property changes that is given at the unbeaten stage, but that in some respects the effect is accentuated. It is surprising to find the sharply increased rate of drainage resulting from a simple, mechanical manipulation of the pulp.

In a similar series run on an entirely different class of pulp, a high-grade, bleached sulfite, previously dried, the results on the unbeaten sample are of interest since apparently the extreme properties of the untreated sulfite pulp influence the extent of the curlation effect. Thus, tearing strength is already near its possible maximum and therefore curlation cannot cause the sharp increase which in many cases is typical of the process. Similarly, bonding of the fibers is already so low that curlation cannot cause its usual decrease of burst and tensile strength. The increase in stretch, however, shows that the effect of curlation on fiber configuration is still present, and this may be verified under the microscope. As beating of this pulp progresses, curlation again asserts its typical effects on all properties, including a sharp increase in the rate of drainage imparted to heavily beaten pulp.

As might be expected, groundwood is more resistant to influence by curlation than are the chemical pulps. The application of ½ hp/da. ton, however, groundwood shows a readily perceptible change.

Screenings from the usual types of chemical pulps are well defibered by curlation with moderate application of power, and with high freeness maintained in the resulting pulps. A comparison showing the effect on an unbleached sulfite of an extreme curlation treatment, applying about 50 hp/da. ton by a power driven, gyrating plate, exhibits some noteworthy new trends. The great drop in freeness shows that the fibers have finally undergone rather drastic disintegration. Yet at the low freeness, tear has gone up to a high value, and burst and stiffness have fallen. Sheet porosity is still very high for such a large drop in freeness. Perhaps most remarkable of all, printing opacity has risen and brightness is unimpaired. The change in appearance is equally striking. The rather sleazy look of the initial unbleached sulfite sheet has changed to the level, somewhat chalky appearance of heavily loaded book paper. Altogether the treated pulp presents a unique combination of properties, one which seems to offer much food for thought.

Stretch properties of pulp, wet or dry, are increased by curlation. Wet stretch is particularly sensitive—gains of 300% are readily obtained on slush unbleached sulfite. Wet strength should continue to serve as a convenient aid in defining curlation degree. The test has also supplied added insight to some of the more fundamental relationships of pulp and paper quality. The test used is that developed at the Pulp and Paper Research Institute of Canada by W. S. Morris and Dr. R. de Montigny.

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The Curlator—Its Application to High Yield Newsprint Sulfite

FRANK P. SILVER, Gen. Supt.
Price Bros. & Co., Ltd., Riverbend, P.Q.

The Curlator (Trademark, Patents pending) used in this preliminary work is more than an experimental unit; it is, in fact, the initial commercial scale model representing the difficult jump from small laboratory apparatus. It was designed and built for use in working out the proper characteristics of a perfected commercial machine to follow, and for studying some of the commercial applications of the new kind of treatment performed by the machine, including, but by no means limited to, the application on high-yield sulfite. Similarly, the present setup of the machine in the mill system is experimental in nature with a view to exploring certain possibilities for increasing the yield of sulfite for newsprint, and at the same time to proving out the machine in prolonged operation under mill conditions. The results of the early work have been generally satisfactory.

In the commercial curlator, the stock, supplied from a headbox, enters the center of the machine, progresses radially outward during treatment, is picked up by a rotating turntable at the periphery of the working zone, and doctored off at the stock outlet.

Past experience with the high yield pulps had shown that such pulps contain a reduced proportion of free fiber, and an increased quantity of soft white shives or fiber bundles, plus harder brownish chips and, of course, knots of various sizes. We had learned, too, that the Curlator had a throughput on this type of stock of approximately 30 tons per day. We could not, therefore, expect to treat the full mill requirements of 120 tons of sulfite per 24 hours. It was obvious that the regular screen system would accept the free fiber in the high-yield pulp. Why not then apply the Curlator to the rejects only? In this way we felt sure that the fiber bundles and chips would be broken up and processed into acceptable fiber for the paper machines. With a pulp of 3.5 chlorine number, approximately 4% of the production was being rejected or about 5 tons per day, into the wet lap system for the Kenogami board machine. It was felt that most of this could be treated and converted into acceptable fiber for newsprint.

The first step was to ensure that all chips and fiber bundles, even small clean knots, were accepted into the screening system. After several trials we equipped our secondary Jonsson knotter with a plate having 11/16 in. diam. holes instead of the regular ¼ in. diam. holes. With properly adjusted showers only the very large knits were then rejected. The chips and fiber bundles now fell into the accepted pulp from the primary knotters and passed on into the screen system. Even with some breaking up of fiber bundles as they passed through the pumps the rejects from the primary screens of course increased and were passed onto the secondary screens. However, the rejects from the secondary screens, instead of being allowed to pass off into the wet lap system for wrapper use, were diverted to one end of a spare tank which was bulk-headed to make two tanks. The thin stock from this tank is pumped over an inclined 60 mesh wire where it is thickened. This stock falls into the other end of the divided tank. From here it is pumped into the headbox controlling the flow to the Curlator. After discharge from the working surfaces, fiber and white water rejoin on the intake side of a pump which sends the pulp to the washer tank. From here it flows back, through the whole screen system where sufficiently treated fiber is accepted and rejects are returned for additional passes through the Curlator until they are accepted.

With the system in operation, we began at once to increase the sulfite yield. From a chlorine number of 3.5 we gradually worked

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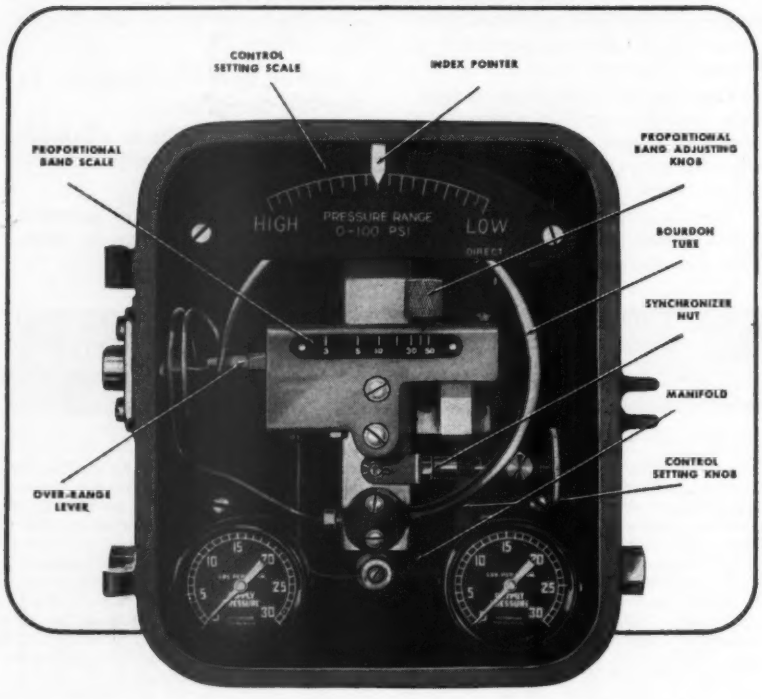

These controllers are designed for many industrial applications requiring accurate control where more expensive instruments are not warranted.

Applications include, among many others, pump governors, steam pressure reducing stations, gas well pressure reduction, etc., requiring small to intermediate proportional band.

The case is rugged and suitable for outdoor service; it is so designed that it may be mounted on the valve (on integral pad or by means of a U-clamp) or, *if the occasion arises, it may be removed from the valve and mounted on a wall.* A flush type case is also available for panel mounting.

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up to six. The rejects from the second rotary screens increased, of course, and were passed to the Curlator. The amounts of chips and fiber bundles had increased but were yet white and soft in character. The soft, brownish small knots defibered satisfactorily. We were, however, now treating rejects at the rate of 25 tons per day with working surfaces having 16 pyramids to the inch, and it was considered advisable to introduce a preliminary treatment just prior to the Curlator as a means of increasing its throughput and also to decrease the run around of the harder fibers which were not sufficiently reduced on the first pass to be accepted by the screens. Before increasing the yields further, a small jordan which we had on hand was installed in the line just before the Curlator headbox. We also installed working surfaces having eight pyramids to the inch.

We now continued our program of increasing the pulp yield and the chlorine number rose to 10. The total yield had now increased from 47% to 52%, a gain of 5%. This is a fairly accurate figure. The chips are weighed into process by a Merrick belt Weightometer that is checked weekly by means of a chain test and monthly by certified railway weights of cars of imported chips from the company's sawmills. The pulps to the paper machines are gate-metered at the mixers. Proper chip moisture and density tests are taken at frequent regular periods during the operating day. Pulp samples for chlorine number tests are taken from the blowpit discharge line and also at the riffler headbox.

The quality of the sulfite which was being produced compared favorably in every way but one with that of the previous stock. Mullen remained about the same. Tear and stretch increased. Color remained good. However, dirt did increase. This was caused by the fact that we were retaining in the screening system the knots and dirt that previously were rejected for ultimate use in wrapper furnish. This build-up of dirt, after repeated passes through the Curlator, became small enough to be accepted by the primary flat screens. In the development period, the Curlator had treated No. 1 sulfite at a chlorine of 3.5 and had demonstrated conclusively that it did indeed almost eliminate dirt by rubbing and reducing it to infinitesimal size.

We realized that with the Curlator in operation, the system was a closed one and was accepting to newsprint almost the total digester yield. Steps were taken to provide a bleed for the dirt by installing one additional line of flat screens, which was not in use, to screen the accepted stock from the second rotaries before returning it to the primary system. The rejects from the flat screens thus setup, containing most of the larger dirt particles, were sent into the wet lap system for the wrapper machine. The fiber loss was negligible.

The Curlator, as we have applied it, is essentially a refiner. For the type of pulp with which we have operated during the past eight months, approximately 1 to 1½ hp per ton of treated pulp has been required. Stock feed pressure to the Curlator is easily and simply maintained at about 3 psi by means of an overflow headbox with an adjustable dam. Feed consistency is 3% to 4%.

The Curlator de-waters the stock considerably before treatment so that exit consistency is about 20% to 25%. The white-water thus extracted re-unites with the sulfite nodules immediately after the Curlator and is pumped back into the screen system. The Curlator has a capacity on the high-yield pulp rejects of 45 tons per 24 hours. We find that the best treatment is given if we maintain a throughput of 35 to 40 tons and so arrange the rejections as to maintain this rate to the Curlator. Maintenance is negligible. From our observation, we feel that the Curlator will not require constant attention when located in its permanent place.

The increase in yield from 47% to 52% has, in effect, resulted in a saving of wood to process of 10%. At present day costs per cord or prepared unit of wood this means a very substantial dollar saving per ton of sulfite produced. Approximately 10% saving in steam and chemicals has been experienced. Increased dollar value of pulp produced results from the

fact that that portion of each cook which produced screenings suitable only for wrapper has, by treatment on the Curlator, become No. 1 pulp suitable for newsprint.

In our sulfite mill, with five digesters, we have one digester so installed that we can use it to cook inferior wood to produce pulp suitable only for wrapper. It was possible during the development work to use this digester for high-yield cooking, and, by installing another spare knotter and rotary screen, set up a separate pulp system which included the Curlator. We were thus able to curlate entire blows of high yield pulp. Two such blows of 52% and 55% were treated and piped to the mixers in such a manner that one newsprint machine received all curlated high-yield sulfite in its furnish for a period of several hours. It was gratifying to note that no changes to paper machine operations were necessary. The quality of the sheet remained equal in every way to the standard.

Our Research Department has indicated that the limit of high yield may be 70-75%. This certainly would require some other means than we now have for removing pulp from the digesters, and possibly a shredding step before the Curlators.

Rice Barton Acquires Rights

Formation of the Rice Barton Research Corp., a wholly owned subsidiary of Rice Barton Corp., Worcester, Mass., is announced by Charles Sumner Barton, president of Rice Barton.

"The purpose of this new organization is to conduct process and product research for the paper industry. Its further purpose is the sale and promotion of equipment which will be developed with its own resources and with the help of its many friends in the industry," said Mr. Barton.

The initial step by the Rice Barton Research Corp. will be to further develop and sell exclusively machines basically designed by Wandel Industries and known to the industry as "DynoMachines."

These machines—DynoPulpers, DynoFiners and DynoChests — are operating successfully in a number of mills throughout the country.

Rayonier Timber Appointments

Edward Bartsch, president of Rayonier, announces these advancements in the company's Northwest Timber Division and Land Department, with headquarters at Hoquiam, Wash.:

G. M. Rhebeck has been appointed manager of the Northwest Timber Division, and Leonard J. Forrest has assumed the responsibilities of manager of the Land Department.

Other Timber Division appointments: A. M. Polson, general superintendent of the division; Bennett Ellingson, logging superintendent of Grays Harbor area; R. F. Cunningham, logging superintendent of Clallam County area.

Silencer for Suction Rolls

Dr. John P. Nash, of Kimberly-Clark Corp., announced a solution for a major noise problem in paper mill operation at the Technical Association convention in New York. The invention eliminates suction roll noise, which—because of increasing machine speeds—has been a fatigue factor in paper mill work. He said that installation of Beloit Iron Works equipment on nine K-C creped wadding machines has indicated its effectiveness.

Work on the problem was done in the Neenah, Wis., Research and Development Laboratories of Kimberly-Clark, under Dr. M. N. Davis, associate technical director, assisted by Dr. Ralph Caston, while Rudolph Moravek and Ralph Grobe of the engineering staff worked on design and installation.

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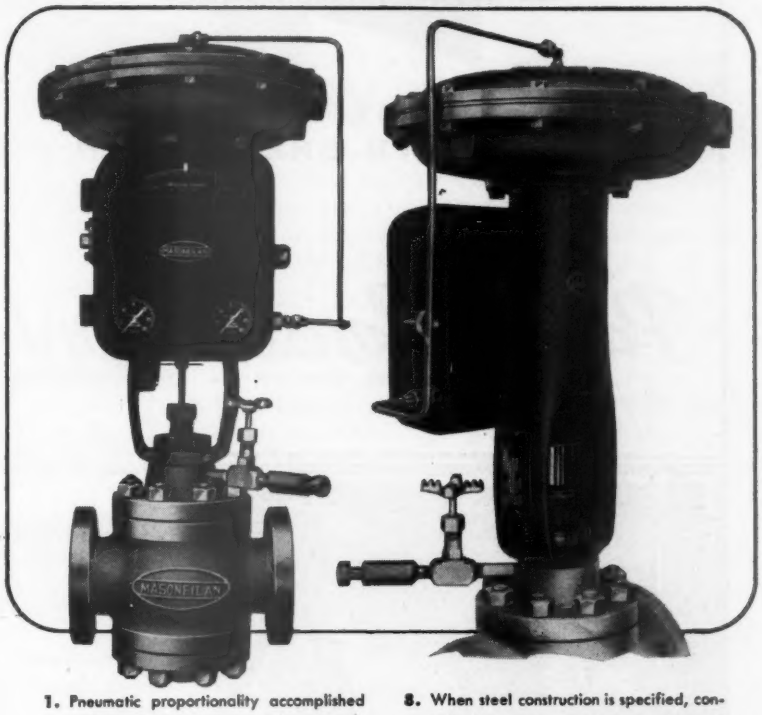

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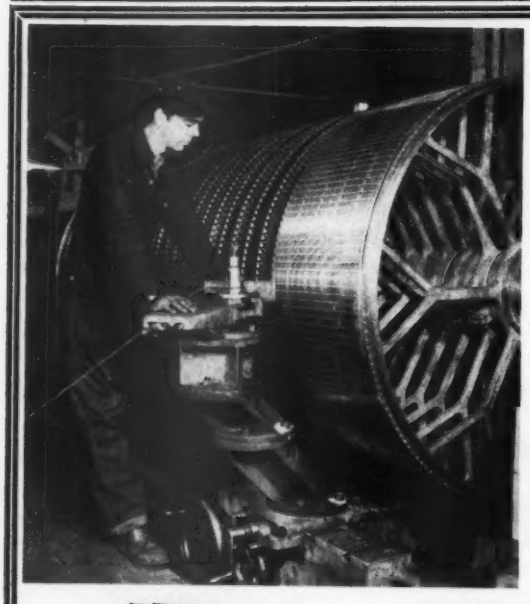

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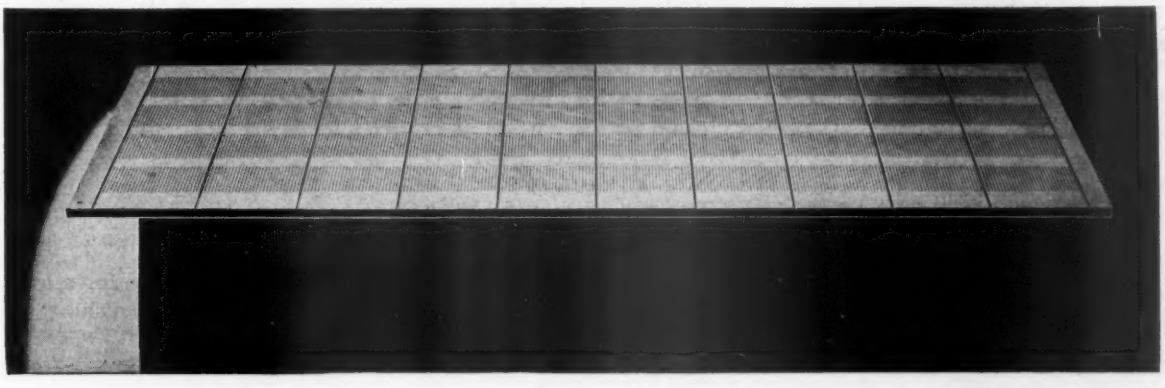

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*Baked phenolic resin lining. Eliminates slime accumulation and corrosion. Insures better product.

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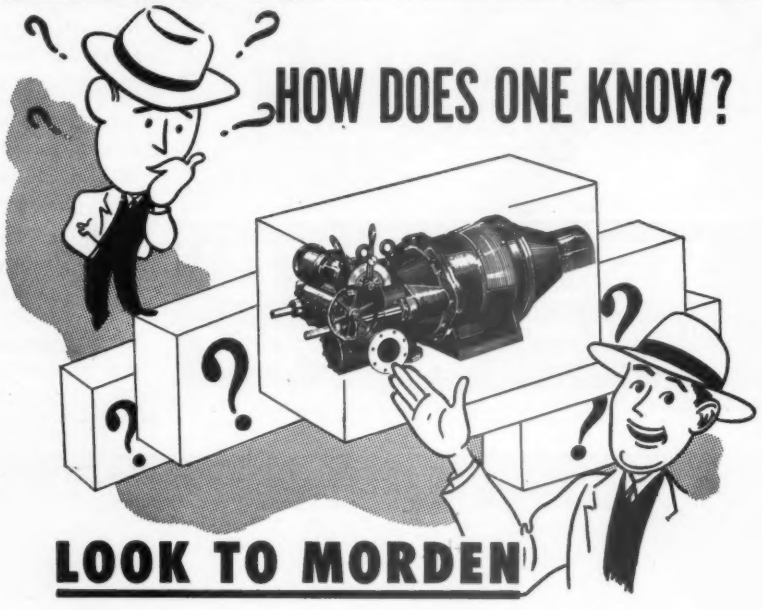
Position Wanted

Man, presently employed, with over 15 years' experience in handling industrial relations in the pulp and paper and the logging and lumbering industries, is desirous of making a change. Experience covers labor contract negotiations, accident prevention, supervisory training, public relations and many other specialized functions of personnel administration.

Reply Box P&P-38, Pulp & Paper, 71 Columbia Street, Seattle 4, Wash.

WANTED: Instrument sales engineer familiar with pulp and paper mill instruments. Territory Pacific Northwest. Applications will be strictly confidential. Reply Box P&P-39, PULP & PAPER, 71 Columbia Street, Seattle, Washington.



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